



JOINT DOCTRINE FOR BARRIERS, OBSTACLES, AND MINE WARFARE

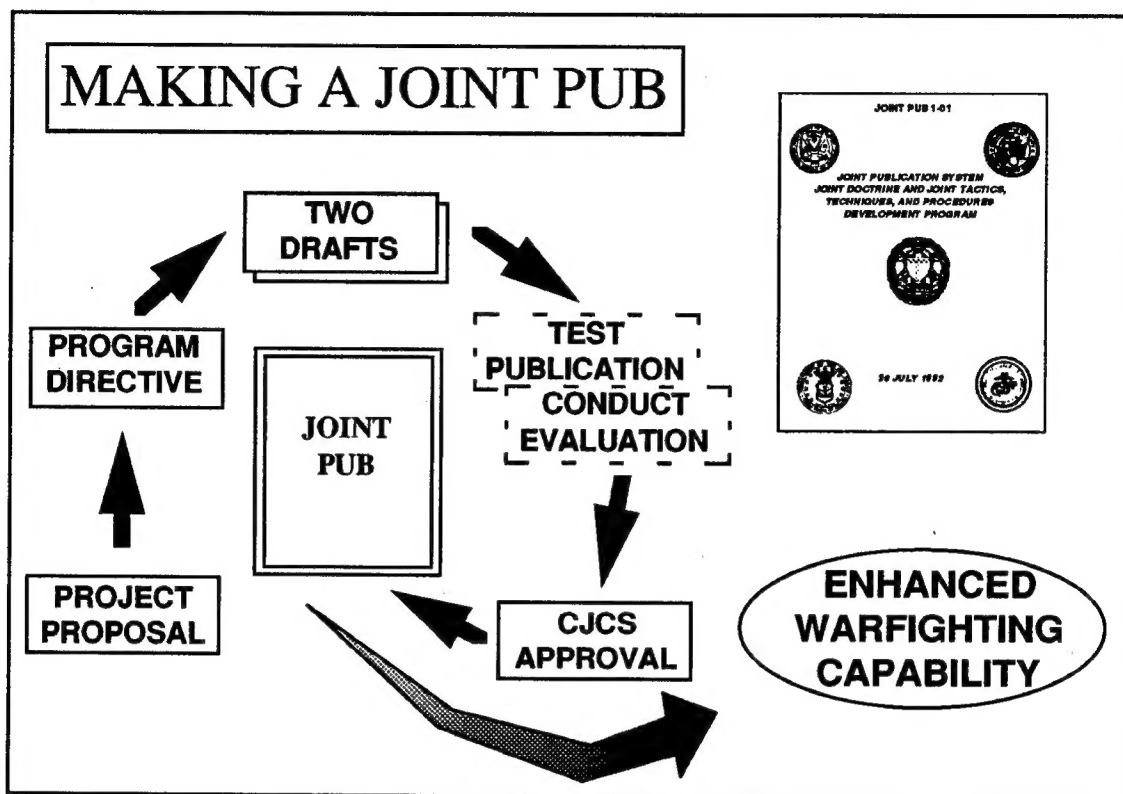


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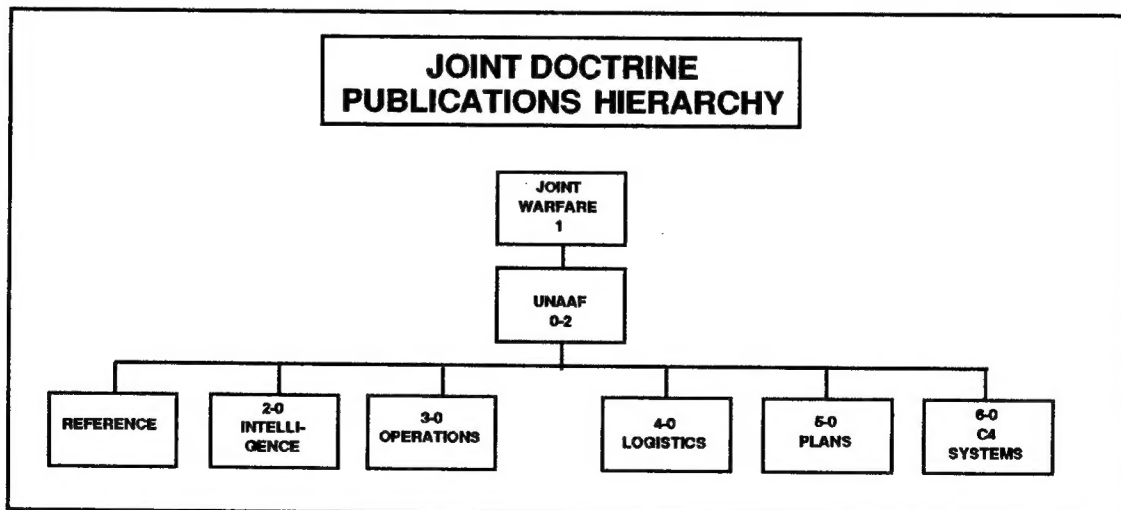
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Joint Pub 3-15
30 June 1993

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Subject: Joint Publication 3-15, "Doctrine for Barriers,
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1. This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff. It sets forth land and maritime barrier, obstacle, and mine warfare doctrine and military guidance to govern the joint activities and performance of the Armed Forces of the United States.

2. Recommendations for changes to this publication should be submitted to the Director for Operational Plans and Interoperability (J-7), 7000 Joint Staff Pentagon, Washington, D.C. 20318-7000.

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7. The lead agent for this publication is the Chief of Staff, United States Army.

8. The Joint Staff doctrine sponsor for this publication is the Director, J-7.

For the Chairman of the Joint Chiefs of Staff:

A handwritten signature in dark ink, appearing to read 'T. R. Patrick', written in a cursive style.

T. R. PATRICK
Colonel, USA
Secretary, Joint Staff

Enclosure

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JOINT DOCTRINE FOR BARRIERS, OBSTACLES, AND MINE WARFARE

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PAGE	CHANGE	PAGE	CHANGE
i thru vi	O	IV-1 thru IV-18	O
I-1 thru I-6	O	A-1 thru A-6	O
II-1 thru II-14	O	B-1 thru B-10	O
III-1 thru III-18	O	GL-1 thru GL-8	O

Deleted pages: None.

JOINT DOCTRINE FOR BARRIERS, OBSTACLES, AND MINE WARFARE

PREFACE

1. Purpose. This publication sets forth principles and doctrine to govern the joint activities and performance of the Armed Forces of the United States. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders (JFCs) and prescribes doctrine for joint operations and training. It also provides guidance for use by the US Armed Forces in preparing their appropriate plans.

2. Application

a. Doctrine, principles, and guidance established in this publication apply to the commanders of combatant commands, subunified commands, joint task forces, and subordinate components of these commands. These doctrine, principles, and guidance may also apply when significant forces of one Service are attached to forces of another Service, or when significant forces of one Service support forces of another Service.

b. In applying the principles and doctrine set forth in this publication, care must be taken to distinguish between distinct but related responsibilities in the two channels of authority to forces assigned to combatant commands. The Services recruit, organize, train, equip, and provide forces for assignment to combatant commands and administer and support these forces. Commanders of the unified and specified commands exercise combatant command (command authority) over these assigned forces. Service component commanders are responsible both to JFCs in the operational chain of command and to the Services in the chain of command for matters that the JFC has not been assigned authority.

c. This publication is authoritative but not directive. Commanders will exercise judgment in applying the procedures herein to accomplish their missions. This doctrine should be followed, except when, in the judgment of the commander, exceptional circumstances dictate otherwise. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence for the activities of joint forces unless the Chairman of the Joint Chiefs of Staff, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance.

3. Scope. This publication provides barrier, obstacle, and mine warfare guidelines for the planning and execution of theater strategy, campaigns, and joint operations during peacetime or combat operation. It focuses on national policy, international law, and operational and logistic considerations peculiar to the preparation and conduct of joint military operations involving barriers, obstacles, and mine warfare.

4. Basis. The development of Joint Pub 3-15 is based upon the following sources:

- a. Department of Defense Reorganization Act of 1986.
- b. DOD Directive 5100.1, "Functions of the Department of Defense and its Major Components."
- c. Joint Pub 0-2, "Unified Action Armed Forces."
- d. Joint Pub 1-01, "Joint Publication System, Joint Doctrine and Joint Tactics, Techniques, and Procedures Development Program."
- e. Joint Pub 1-02, "DOD Dictionary of Military and Associated Terms."
- f. Joint Pub 3-0 (Test), "Doctrine for Unified and Joint Operations."
- g. Unified Command Plan (UCP).

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CHAPTER I

INTRODUCTION

1. General. Employment of barriers, obstacles, and mine warfare can, in concert with other capabilities, enhance a commander's ability to mass combat power, sustain the force, conduct offensive or defensive operations, achieve surprise, and use key terrain, airfields, or sea routes. A JFC must consider both friendly and enemy employment of these capabilities in preparing plans and conducting operations.

2. Barrier, Obstacle, and Mine Employment

a. Advantages. Barrier, obstacle, and minefield employment can provide the capability to:

- (1) Inflict significant equipment and psychological damage and personnel casualties on the enemy, with minimal or no risk to friendly forces.
- (2) Extend, strengthen, and deepen other defensive and offensive measures to support the concept of operations.
- (3) Immobilize the enemy until barriers, obstacles, or minefields can be bypassed, breached, or cleared.
- (4) Exploit geographic features.
- (5) Free forces for other employment.
- (6) Discern enemy intentions. Commitment of enemy forces into a minefield is a detectable indication of intent.
- (7) Create uncertainty for the enemy commander.

b. Disadvantages. The disadvantages of using barriers, obstacles, and minefields are:

- (1) Their creation and removal can consume a significant amount of time, materiel, equipment, and transportation and will be manpower intensive and hazardous.
- (2) They can be bypassed, breached, or cleared.

(3) They can cause casualties to friendly forces and noncombatants, as well as limit friendly mobility.

(4) Defensive minefields must be rendered safe following their operational usefulness.

c. Levels of Employment

(1) Strategic Employment. Before hostilities, barriers, obstacles, and minefields can enhance deterrence without posing an offensive threat. Defensive employment along a hostile land border can demonstrate friendly resolve. Maritime defensive and protective mining can help protect friendly ports and waters. Pre-hostility employment would be as directed by the National Command Authorities (NCA). NCA determination would be based, in part, on the political signals sent and on concurrence by affected friendly nations. Should deterrence fail, offensive maritime mining of enemy ports and waters can constrict enemy seaborne economic war sustainment efforts and reduce enemy ability to safely deploy maritime forces. Similarly, offensive employment of air-delivered scatterable mines can deny or restrict enemy strategic mobility and sustainability efforts.

(2) Operational Employment. Defensive barrier, obstacle, and minefield employment can help protect friendly ports, lines of communication, and key facilities and free combat forces for offensive employment. Offensive employment can protect friendly maneuver while disrupting enemy ability to concentrate or maneuver forces. Barriers and obstacles having operational significance usually differ in scale from those having tactical significance. However, size alone does not make an obstacle operationally significant. At the operational level, their primary use is the restriction of enemy maneuver options or the creation of friendly maneuver options. Major natural terrain features, coupled with focus on the enemy, often provide the foundation for the development of an obstacle or barrier plan. Operational barriers and obstacles may be created by the composite effect of many closely coordinated tactical obstacles or by the reinforcement of natural obstacles to form large terrain or massive obstacles. An example of a massive obstacle is the temporary flooding caused by the destruction of a major dam on a river. This, however, is only temporary in nature. Mines can also contribute to

gaining the air control or air supremacy essential to achieving campaign objectives. Mines can delay efforts to repair damage to air bases caused by immediate effect munitions, thus degrading or denying the base's capability to launch or recover aircraft. Mines can also restrict the deployment of mobile, surface-based air defenses, as well as surface-to-surface systems, because rapid movement in a mined area increases the risk of a mine encounter. Mines can also disrupt logistic sustainment operations being performed in the enemy's rear area of operations.

(3) Tactical Employment. Employment at the tactical level, such as the creation or countering of barriers, obstacles, or minefields, is normally done to achieve tactical offensive or defensive objectives.

3. Threat

a. Land. US forces may encounter barriers, obstacles, and minefields across the operational continuum. This is especially true in areas with highly restricted terrain such as mountains or jungles. US forces may be faced with highly mobile enemy forces supported by lethal air and ground fires. Enemy surveillance capabilities may determine the effectiveness of employing friendly barriers, obstacles, and minefields. The timing and methods of emplacement may be determined by the air situation. Enemy forces may make extensive use of barriers, obstacles, and minefields, including modern as well as technologically obsolete mines and booby-traps, air-delivered scatterable mines, and a variety of countermeasures to defeat friendly barriers, obstacles, and minefields. Because of the relatively low cost of mines and their worldwide availability, US forces must be prepared to counter their use throughout the operational continuum. In addition, enemy use of nuclear munitions and chemical mines must be anticipated. The threat of terrorist employment of mines, explosives, and booby traps may necessitate defensive measures to reduce the vulnerability of US personnel, equipment, and facilities.

b. Maritime. Enemy mine laying operations may be conducted against friendly ports, harbors, and sea lines of communication. Mines may also be used in other areas vital to US and allied maritime forces such as amphibious objective, fire support, and carrier battle force operating areas. The relatively low cost of mines makes them an ideal weapon for all nations with access to the

sea. The application of technology by industrially advanced countries has produced a sophisticated, effective form of maritime mine warfare. Nevertheless, older mine technologies remain effective. The ease of laying mines by ship, aircraft, or submarine presents a valid threat to a commander who must rely on naval support or on seaborne reinforcement and resupply. Maritime power projection and resupply forces originate from friendly ports. During amphibious operations, assault and assault follow-on shipping must transit narrows and operate in shallow waters. The enemy can place these forces at risk, with little cost to its own forces, by laying only a few mines.

c. Air. Control of airspace is essential to effective surface operations. Enemy use of mines could pose a major threat to the ability to conduct effective air operations. The enemy might employ sea mines in an area where aircraft carriers would need to operate to be within effective range of the enemy. The enemy might also employ scatterable mines, along with immediate effects munitions, in attacks against friendly air bases ashore. Scatterable mines could seriously disrupt and delay air base launch and recovery operations, disrupt logistic sustainment operations to the air base, and thereby limit friendly air operations.

4. International Law and US Policy. The JFC is responsible for ensuring that employment of barriers, obstacles, and mines conforms with international law and US policy. To facilitate compliance, rules of engagement (ROE) for employment of mines are normally included in operation plans (OPLANs) and operation orders (OPORDs). Enemy employment of barriers, obstacles, and mines that does not comply with international law should be documented. The JFC staff legal officer and political advisor can assist by being actively involved with the JFC staff during the planning and execution of mine warfare.

a. International Law. International law and practice regulate the use of the seas, each nation's rights regarding its national territory and waters, the initiation and conduct of armed conflict, and limitations regarding employment and types of weapons.

(1) The law of armed conflict postulates three basic principles in the use of force: military necessity, proportionality, and humanitarianism. The principle of military necessity allows the use of force as required to achieve legitimate military objectives.

Proportionality requires that the degree of force used must be no greater than that necessary and proportionate to the prompt realization of legitimate objectives. The principle of humanitarianism forbids the inflicting of suffering, injury, or destruction not actually necessary to accomplish legitimate purposes. Humanitarianism, as related to civilians and neutrals, is the basis for much of the international law dealing with mine warfare.

(2) The United Nations (UN) Charter forbids the use of force and, by extension, the use of sea mines in armed conflicts except in two situations. The first is when the UN or another competent international or regional organization or agency approves such use to enforce approved sanctions against an aggressor. The second situation is when the use of force is required for either individual or collective self-defense against imminent or ongoing attack.

(3) The Hague Convention (VIII) of 1907, which addresses the use of sea mines, has achieved almost universal acceptance by nations. The provisions of this convention forbid the laying of unanchored automatic contact mines that do not become harmless within 1 hour after whoever lays them loses control over them and of anchored automatic contact mines that do not become harmless immediately upon breaking free of their mooring. The mining of enemy waters and ports for the sole purpose of intercepting commercial shipping is prohibited. The Convention also requires belligerents to do their utmost to render anchored automatic contact mines harmless within a limited time. Moreover, when a belligerent can no longer maintain surveillance over such mines, it must notify other governments and shipowners of minefield locations as soon as military conditions permit. No belligerent has as yet asserted that the laying of mines developed since 1907 (magnetic, acoustic pressure) is not governed by Hague VIII.

(4) There are two international agreements that bear indirectly on maritime mine warfare.

(a) The Seabed Arms Control Treaty of 1971 prohibits placing any nuclear or other weapon of mass destruction on the seabed or subsoil thereof beyond a 12-mile coastal zone. Weapons

of mass destruction, other than nuclear weapons, are not defined in this or any other arms control treaty.

(b) The navigation and overflight provisions of the 1982 UN Law of the Sea Convention reflect customary international law and codify the rights and duties of nations with respect to various use of the oceans. The laying of mines must take into account the rights and freedoms enjoyed by all nations under this Convention.

b. US Policy. US policy on barrier, obstacle, and mine employment is addressed in FM 27-10, "Law of Land Warfare;" NWP 27-4, "Mining Operations;" and NWP 9A, "Commander's Handbook on the Law of Naval Operations" (sections 7.7 and 9.2).

CHAPTER II

JOINT COMMAND, CONTROL, AND PLANNING

1. General. There are no special command and control (C2) arrangements for employing or countering barriers, obstacles, and mines. There are, however, certain factors that should be considered during joint planning.

2. NCA and CJCS Guidance. JFCs are subject to definitive US policy and guidance promulgated by the NCA and the Chairman of the Joint Chiefs of Staff. The NCA decisionmaking process evaluates the probable effects of barrier, obstacle, and mine warfare employment across the operational continuum.

3. Joint Force

a. Joint Force Commander. JFC authority to perform those functions of command that involve organizing, planning, employing, directing, and coordinating are discussed in Joint Publications 0-2, "Unified Action Armed Forces (UNAAF)," and 3-0, "Doctrine for Unified and Joint Operations."

b. Mine Release Authority. The employment of mines in international waters or foreign territories (including territorial seas) is a hostile act, thus requiring NCA authorization. The laying of mines in allied territory or waters is permissible during peacetime, with host nation (HN) permission and NCA authorization. Following conflict initiation, the JFC may be authorized by the NCA to employ mines. The JFC should ensure that such employment conforms with both international law and guidance and policy promulgated by the NCA.

c. Rules of Engagement. ROE are directive guidance that authorize and delineate the circumstances and limitations on the use of force. ROE are generally mission-oriented and action-specific. ROE promulgated by the theater combatant commander are based on guidance provided by the NCA through the Chairman of the Joint Chiefs of Staff. This guidance reflects political, legal, operational, and diplomatic factors that may restrict combat operations. ROE are required throughout the operational continuum to ensure compliance with the laws of war and NCA guidance. Combatant commander pre- and post-hostility ROE and OPLAN ROE should address authority to emplace barriers, obstacles, and mines, including the family of scatterable mines (FASCAM). Following NCA release of these elements

for operations, ROE should address their employment by US forces and the prevention, denial, or countering of their employment by the enemy.

4. Coordination

a. Political. The US Ambassador to a foreign country is responsible, through the Department of State, to the President for directing and coordinating the activities of US government personnel in that nation. This authority does not apply to personnel under the command of theater combatant commanders whose responsibility is to the NCA. Nevertheless, the combatant commands and appropriate ambassadors' Country Teams are responsible for maintaining close coordination throughout the operational continuum. This is particularly true for barrier, obstacle, and mine warfare employment that may often be employed before a conflict on the sovereign soil or in territorial waters of a friendly nation. The US Ambassador's efforts can be invaluable in gaining HN consent to such actions. The combatant commander's political advisor, who serves as the point of contact with the Department of State, may be used as the conduit for these coordination efforts.

b. Multinational Forces. US forces may conduct operations within the framework of an alliance, coalition, or other international arrangement. The coordination and planning for joint operations is applicable for multinational operations as well. Planning for land and maritime barrier, obstacle, and mine warfare should be coordinated among multinational forces at all levels. This will preclude limiting friendly operational maneuver; conflicting, duplicative, or divergent operations; and possible fratricide among coalition forces. Furthermore, information on both friendly and enemy barriers, obstacles, and minefields in the joint operating area (JOA) must be exchanged in a timely manner, consistent with established security guidelines.

c. Intertheater. Planning will develop locations, communications, and logistic support requirements for potential strategic and operational barriers, obstacles, and minefields. Plans that could impact on other theaters should be coordinated to prevent potential mutual interference. This is particularly important for maritime mine laying that could affect strategic movement to or from other theaters. Information concerning the

locations of enemy-laid maritime minefields that could affect strategic movement must also be exchanged among theaters.

5. Planning Considerations

a. General. To achieve the maximum effect from an operational barrier, obstacle, or minefield, certain factors must be considered:

(1) Barriers, obstacles, and minefields that have operational significance are usually formed around an existing terrain feature (e.g., mountain chain or a strait) or a manmade structure (e.g., air base, canal, highway, or bridge). Although there is little flexibility in positioning these large-scale obstructions, flexibility exists in selecting and designating those features that will be enhanced or reinforced. Operational barriers, obstacles, and minefields are placed to channelize or delay the enemy's movement or deny the enemy the use of key terrain and should be covered by observation and/or fire whenever possible.

(2) The effects that these operational barriers, obstacles, and minefields will have on both the friendly and enemy forces' ability to maneuver on land and sea or to conduct effective air operations must be analyzed. Operational barriers, obstacles, and minefields do more than just degrade the maneuver of enemy forces. Because of their size, they virtually dictate the maneuver options of both friendly and enemy forces.

(3) The element of surprise is achieved in a different manner through the employment of operational barriers, obstacles, and minefields. Because of their operational significance, both friendly and enemy forces usually know of their existence and location. Surprise can result when a barrier, obstacle, or minefield perceived by one force as significant fails to effectively obstruct their opponent. This implies that the operational significance of a barrier, obstacle, or minefield depends both on its physical obstruction capability and the way in which the opposing forces perceive it. Joint forces can attain and enhance surprise through the use of rapid employment means such as air-, artillery-, or helicopter-delivered scatterable mines that permit rapid mining anywhere in the area.

of operations. These can confront the attacker with a completely new situation almost instantly. The use of hard-to-detect employment means such as submarines is another way to achieve surprise. Surprise can be further gained through the use of lanes and gaps, dummy mines and obstacles, and self-disarming or self-destructing mines. Friendly forces should avoid readily discernible or repetitive employment, and utilize deceptive measures. By varying the type, location, and design, the enemy's understanding and breaching of friendly barriers, obstacles, and minefields is made more difficult.

b. Offensive. In the offense, the priority of barrier, obstacle, and minefield employment, to include air-delivered scatterable mines, is to enhance and protect the friendly force's ability to maneuver. This is achieved by controlling the movement of enemy ground and naval forces and degrading the operability of enemy airbases. The enemy's ability to counterattack or reinforce is restricted and the area of operations is isolated. Barriers, obstacles, and mines have five main objectives in offensive operations:

(1) Prevent Enemy Reinforcement or Counterattack. To prevent the enemy from reinforcing or counterattacking, critical routes are interdicted to hinder movement of reserves and logistics. Speed and depth are vital.

(2) Facilitate Economy of Force. Barriers, obstacles, and minefields allow fewer forces to defend selected sectors, allowing relieved maneuver units and other combat resources to be concentrated in other zones for attack. Similarly, they become a combat multiplier amplifying the firepower effectiveness of the friendly forces defending them by creating optimum fields of fire. Easily defended chokepoints can be effectively reinforced with obstacles, supported by on-call fire support, and held by relatively small forces.

(3) Provide Security. Barriers, obstacles, and minefields can be used in critical areas along the flanks of advancing forces to restrict enemy attacks. At the operational level, river systems, mountain ranges, deserts, and snow- or ice-covered areas are natural barriers and obstacles that can enhance flank security. Shallows, reefs, and other

maritime hazards can be used at sea. Existing barriers and obstacles can be strengthened with reinforcing obstacles and minefields to counter an enemy threat.

(4) Degrade Enemy Air Capability. Mines can pose a significant obstacle to the enemy's ability to recover and resume operations after an airbase attack. Any delays can provide friendly forces an important opportunity to further suppress the enemy's ability to defend against follow-on attacks, leading to the enemy's loss of control of the air.

(5) Fix the Enemy. Air, helicopter, and artillery delivered scatterable mines and special operations forces (SOF) emplaced mines can disrupt and delay the enemy's retreat during pursuit and exploitation. They can also be used to disrupt the commitment of the enemy's reserve and follow-up forces.

c. Defensive. In the defense, the priority for barrier, obstacle, and minefield emplacement is directed toward degrading the enemy's ability to maneuver. A secondary objective is to destroy or attrit the enemy force. Other objectives include the support of economy of force measures and the retention of key terrain or areas of significant political, strategic, operational, or tactical value.

(1) Defensive reinforcement is achieved by integrating systems of barriers, obstacles, minefields, and fires. The objective is to degrade enemy movement, assist counterattacks, and facilitate future friendly offensive operations.

(2) Reinforcing obstacles and minefields are identified as early as possible, because the development of a barrier, obstacle, or minefield system in depth requires time, the commitment of engineer or specialized resources, extensive logistic support, and/or other forces.

(3) Plans include the identification of assets to restore the integrity of a barrier, obstacle, or minefield if breached by the enemy. This is especially important if the obstruction is critical to operational success.

(4) In operations involving land forces, massive obstacle creation should be considered in situations where friendly forces control a major dam on a river. Control of the dam provides the option of limited, controlled flooding or destruction of the dam to create both a destructive flood surge and flooded areas. However, the effect on friendly maneuver and future operations should be evaluated. In addition, care must be exercised to avoid severe collateral harm to civilians. Also, the possibility of creating a politically sensitive situation must be considered.

d. Air-Delivered Scatterable Mines. The employment of air-delivered scatterable mines normally requires close coordination between air forces and other components during both the planning and employment phases of the operation. This coordination normally will be accomplished by the joint force air component commander. To ensure a coordinated effort, a general concept of operations is developed that includes such issues as identification of objectives, timing, minefield placement, ingress or egress routes, and combat joint rescue coordination center. Coordination must be effected if mines are deployed where friendly ground or SO forces may be operating or in locations that lie within the ground force's boundaries. Once emplaced, the mines remain active until detonated or until the mines self-destruct or self-disarm after a preset period of time. Required self-destruct or self-disarm times depend upon the operational or tactical situation and are not necessarily related to the proximity of friendly forces. Air-delivered scatterable mines are selected when they are the optimum means available to support the JFC's concept of operations.

(1) Air-delivered scatterable mines will not be employed anywhere within a component commander's boundaries, regardless of the fire support coordination line placement, without prior coordination with and approval from that component commander. Specific coordination procedures should provide an optimum balance between requirements for control and flexibility in execution. In areas close to friendly forces or where friendly forces may operate before the mines self-destruct, detailed coordination is essential. In contrast, general approval between the ground, SO, and air commanders before commencement of air-delivered scatterable

mining operations in an operational-level interdiction effort will enhance mission effectiveness. Upon approval, the location of employment will be reported by the employing force to the appropriate ground force commander.

(2) Air-delivered scatterable mines are most effective when used separately or combined with other weapons to delay, disrupt, destroy, or channelize enemy forces. They can complement and extend mine emplacement capabilities and effects beyond the range of land or maritime forces' internal mine-delivery systems. For example, air-delivered scatterable mines can be used to secure flanks of ground units and close breaches in minefields and obstacles or protect an amphibious objective area.

(3) In early stages of contingency operations or at extended ranges, air-deliverable scatterable mines may be the only available mining capability.

(4) Minefields employed in direct support of ground forces have limited effectiveness if unobserved and not covered by some means of fire or fire support.

(5) If air-delivered scatterable mines are the only type of ordnance that will satisfy the ground force commander's requirements, their use should be specified in the ground force commander's request. Similarly, if employment of air-delivered scatterable mines in a specified area is not acceptable (i.e., the desired effect) this should also be specified in the ground force plan.

e. Denial Considerations. A denial measure prohibits or restricts the enemy use of space, personnel, supplies, or facilities. Denial operations may include destruction, removal, contamination, or the erection of obstructions.

(1) The combatant commander establishes the theater policies governing denial operations in coordination with allied or friendly governments. Detailed planning and execution are subsequently delegated to subordinate commanders. In developing denial policies, consideration must be given to those facilities and areas required to support life in the post-hostility period regardless of the outcome of the conflict. The long-range social, economic, political, and psychological effects of destruction of civil properties and material must be weighed

against the military advantages achieved. The purpose of the law of war toward denial operations is to ensure that the violence of hostilities is directed toward the enemy's forces and is not used to cause purposeless, unnecessary human misery and physical destruction.

(2) Denial operations usually do not focus upon immediate enemy destruction, but rather on contributing to future friendly operations. Denial operations may have a major impact on the civilian population. Denial targets frequently involve civil facilities and structures, such as electrical power generation facilities and ports, and require careful judgment regarding the military importance versus the impact on the civilian population.

f. Deception. Deception is defined as those measures designed to mislead the enemy by manipulation, distortion, or falsification of evidence to induce the enemy to react in a manner prejudicial to enemy interests. There are two basic approaches to deception. The first is to increase uncertainty in order to forestall the enemy's timely reaction. The second is to misdirect the enemy toward a line of action that favors friendly operations. Barriers, obstacles, and minefields can support the aims of both approaches. Time and enemy surveillance techniques will determine the best method of employing barriers, obstacles, and minefields in support of deception. Allowing the enemy to observe units or vessels engaged or preparing to engage in seemingly realistic employment or breaching operations transmits a specific message to the enemy. Operations must be planned so that their execution will not inadvertently reveal friendly plans. The employment of dummy obstacles, minefields, and concealed obstacles are deception techniques. Allowing the enemy access to manipulated or distorted friendly operations plans, that support observations of friendly activity may significantly enhance the believability of the deception.

g. Political and Psychological. The primary objective of employing barriers, obstacles, and minefields may be deterrence rather than physical destruction. Accordingly, political and psychological considerations are key aspects that have far-reaching implications. From a political perspective, such measures will signal friendly resolve to take actions required to protect national interests. Psychological deterrence is also achieved. Although the degree of psychological deterrence cannot be

quantified, the mere suspicion that mines have been laid can adversely affect enemy planning and operations in excess of the actual threat. The psychological impact of mines can be increased by news-media exposure of their existence and lack of a ready capability to implement countermeasures.

6. General Planning Sequence. Barrier, obstacle, and minefield planning is a top-down procedure. It is integrated with the commander's intent, intelligence preparation of the battlefield, concept of operations, and fire support plan at each level. This provides for the synchronization and focusing of friendly forces' efforts before the plan is passed to the next subordinate level. Continual coordination between all levels of command ensures the best utilization of natural barriers and obstacles and minimizes requirements for reinforcing obstacles and minefields.

a. The planning sequence begins with the receipt of a mission or task and ends with the completion of a campaign or major operation.

b. During the initiation phase, the JFC may issue a warning order to subordinate commanders and allocate barrier, obstacle, and minefield employment and support tasks for planning.

c. During the concept development phase, the JFC conducts a detailed counterintelligence and intelligence analysis of missions, enemy forces, friendly forces, terrain, and time available. From this analysis, the JFC expresses the overall intent and issues planning guidance. This guidance normally includes the identification of areas or zones that require operational-level barriers, obstacles, and/or minefields; critical targets or enemy functions for attack; sequencing of barrier, obstacle, and minefield employment and desired effects; logistic priorities; rules of engagement; and the employment of obstacles and minefields to support denial operations.

d. During the plan development phase, the JFC's staff initially assesses the terrain and weather and climate to identify existing operational-level barriers, obstacles, and limits imposed by expected weather. The need for additional barriers, obstacles, and minefields is identified. Areas suitable for enhancement and reinforcement are identified. Special attention is given to identifying areas that could be reinforced to form massive area obstacles. The terrain is evaluated from both friendly and enemy perspectives. The evaluation

considers the enemy's ability and willingness to cross difficult terrain. Friendly capabilities should not be assumed to be the same as enemy capabilities. Both friendly and enemy perspectives and capabilities are evaluated to estimate options available to each side. The terrain and climate assessments during the initial stage of the plan development phase will enhance the integration of barriers, obstacles, and minefields into the overall plan.

e. Once the JFC's staff has determined what operational barriers and obstacles exist within the area of operations, formulation of the formal barrier and obstacle plan is initiated. This may include the employment of reinforcing barriers, obstacles, and minefields. Emphasis is placed on maximizing the effectiveness of existing barriers and obstacles. Each barrier and obstacle plan requires an estimate of possible or probable enemy actions to identify opportunities for offensive and defensive action. When completed, the plan should clearly delineate operational barriers, obstacles, and minefields and their intended effect on the campaign.

- (1) The JFC and JFC staff must consider the various component weapons systems and delivery assets available to deliver or emplace the selected reinforcing barriers, obstacles, and minefields. The delivery and/or emplacement assets must be identified and allocated accordingly. The JFC is also responsible for integrating this support into the overall campaign.

- (2) The barrier and obstacle plan formulation should also identify areas that must remain free of obstacles or minefields to facilitate friendly maneuver. Such areas are necessary to exploit the advantages gained from enemy reactions and vulnerabilities. At the tactical level in ground operations, this is achieved through the designation of obstacle zones and belts.

- (3) Although sustainment is a Service component responsibility, the JFC must consider the capabilities, vulnerabilities, and limitations of logistic systems in the planning and execution of the operation. To achieve flexibility, the JFC must anticipate current and future requirements, the potential for degradation by enemy action, and the ability to sustain operations throughout an entire operation or campaign.

(4) The barrier, obstacle, and minefield guidance contained in the OPLAN should provide for the necessary control of both obstacle and/or minefield and obstacle and/or minefield-restricted areas. It may designate critical obstacles and reserve the execution of selected obstacles. However, restrictions placed on subordinate commanders should be limited to those deemed necessary by the JFC.

(5) The development of the joint campaign plan necessarily includes estimates from the component commanders as to how their assets and capabilities can best support the JFC's objectives.

f. The JFC reviews and approves the concept of employment for operational barriers, obstacles, and minefields and the denial plan. As part of this approval process, the JFC verifies that the concept of operations meets intent and guidance and facilitates synchronization to produce the most effective employment of operational barriers, obstacles, and mines.

g. Once formal approval of the OPLAN is obtained, subordinate and supporting commanders develop their own plans. In doing so, they can determine how existing and reinforcing barriers, obstacles, and minefields will affect maneuver, what conditions are imposed on battle plans, and how to employ supporting obstacles. Although this is addressed as a separate step, subordinate and supporting commanders develop plans concurrently with those of the JFC.

h. The barrier, obstacle, and mine warfare plan is published, if required, as an appendix of an annex to the theater campaign plan, OPLAN, or OPORD. In addition, the reporting of execution or employment of barriers, obstacles, and minefields should be addressed in OPLAN or OPORD annexes and appendices (e.g., ROE and in unit standard operation procedures).

i. Although employment is addressed separately in this publication, planning and employment are a continuous process. As one operation is executed, the next one is planned, coordinated, and executed. In addition, planners must closely monitor execution and be prepared to adapt the plan, and future plans, in response to changing circumstances. This may involve reapportioning and reallocating assets and reprioritizing support for barrier, obstacle, and minefield emplacement.

7. Planning Support

a. Intelligence. Barrier, obstacle, and mine warfare planning requires timely and reliable all-source counterintelligence and intelligence support. The collection, production, and dissemination of counterintelligence and intelligence information should commence during peacetime. Tasks include identifying and evaluating enemy mine-production capabilities and facilities; types, quantities, and capabilities of mines that may be used, including those acquired from other nations; technical information on each type of mine (characteristics, description, capability, and vulnerabilities); doctrine for enemy employment and countering employment of friendly obstacles and mines; breaching capabilities (including assets, methods, and techniques); and current and future operational capabilities. During conflict development, intelligence support should concentrate on enemy storage locations; topographic, hydrographic, and oceanographic information; potential locations for enemy employment; and expected tactics. The primary objective following conflict initiation are enemy barrier, obstacle, and mine locations; remaining employment capabilities; and expected reactions to friendly operations. The intelligence produced should be expeditiously disseminated to planning staffs to facilitate the employment and countering of barriers, obstacles, and mines that require extensive planning and preparation. Doctrine and responsibilities for intelligence support are addressed in Joint Pub 2-0, "Doctrine for Intelligence Support to Joint Operations."

b. Logistics. Planning for the use of barriers, obstacles, and mines involves the acquisition, storage, maintenance, distribution, and security of the material. Logistic planners must be included early in the planning process to ensure proper coordination and timely acquisition of the resources that will be needed to execute the plan.

(1) Acquisition and Storage. Anticipation is key to a sound acquisition and storage plan. Planners must ensure that the proper mix of mines and minefield, obstacle, and barrier emplacing materials and counterobstacle equipment and material are made available in time to meet the demands of the OPLAN. Requirements at the operational level must be anticipated to prevent delays in delivery of the

material to a theater. The storage of mines, unless they are special munitions, will normally be handled like any other munition.

(2) Distribution. The execution of this logistic function is crucial to the success of the OPLAN. It helps transform the operational plan into tactical operations. Logistic planners must ensure the availability of sufficient resources to transport barrier and/or obstacle material and mines to the place of employment or deployment.

c. Communications. Planning for and employment of barriers, obstacles, and mines require communication support to facilitate C2 of joint and combined coordination and emplacement and information flow to inform friendly forces of locations. These activities require that secure, interoperable command, control, and communications systems are available to support the mission. This includes developing an architecture and coordinating systems, personnel, automation, frequencies, and cryptographic support.

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CHAPTER III

EMPLOYMENT

1. General. The objective of barrier, obstacle, and mine warfare employment is to delay, disrupt, and/or attrit enemy forces or protect friendly forces. This employment is not an end in itself, but is an adjunct to other military capabilities. This chapter addresses responsibilities and considerations used to channelize, delay, disrupt and/or attrit the enemy and protect friendly forces relative to employment of barriers, obstacles, and mines in support of land, maritime, and air operations.

2. Employment Principles

- a. Barriers, obstacles, and minefields should be evaluated from both an offensive and a defensive posture. Current doctrine allows the JFC a range of offensive and defensive options. Typically, the option selected will combine elements of static and dynamic types of defense or a combination of defense along one sector and offense in another sector.
- b. Barriers, obstacles, and minefields should directly support the JFC's plan. They should be carefully matched to the terrain with a maneuver concept focuses on enemy forces as objectives. Coverage by fire is essential to restrict enemy breaching efforts, maneuver, and massing of forces and to increase the destruction of the enemy. Land barriers, obstacles, and minefields not covered by direct or indirect fire provide only minimal delays or diversions, which may be all that is needed. An example of where minimal delay or diversion would support JFC objectives is the use of air-delivered scatterable mines in an interdiction or deep-attack role.
- c. Reinforcing obstacles should be integrated with existing barriers and obstacles to support the JFC's intent and operational concept. When possible, these reinforcing obstacles are used to close gaps or routes between existing barriers or obstacles. Reinforcing obstacles may also be employed on their own to support tactical objectives. The locations selected for these obstacles should be difficult to by pass, thereby delaying the enemy or requiring the enemy to change plans.
- d. Barriers, obstacles, and minefields are more effective when employed in depth. A series of simple obstacles is often more effective than one large

elaborate obstacle. Any barrier, obstacle, or minefield can be breached if the enemy is willing to expend the time, effort, and resources necessary. When employed in depth, the cumulative effect of successive barriers, obstacles, and/or minefields exposes the enemy to friendly fires and disrupts the enemy's plan of action.

e. By varying the type, design, and location of reinforcing obstacles, the enemy's breaching operation is made more difficult. Scatterable mines permit rapid mining anywhere in the battle area, confronting the attacker with a completely new situation almost instantly. The self-destruct feature of the scatterable mine also provides surprise by allowing unexpected friendly movement through a recently mined area where mines have just self-destructed. However, the locations of these recently mined areas must be furnished immediately to affected friendly forces because there may be a percentage of mines that have not self-destructed as designed. Surprise is also achieved by using phony obstacles that deceive the enemy as to the extent, pattern, and density of the barrier, obstacle, or minefield system. Phony obstacles may produce greater results once the enemy has been sensitized to expect real obstacles and minefields.

f. The effectiveness of barrier, obstacle, and mine employment can be effected by the air situation. Forces possessing control of the air may undertake large-scale, time-consuming barrier, obstacle, and/or minefield emplacement and/or countermine operations without extreme security measures. Forces without control of the air may lose the advantages of concealment and surprise and either have their barriers, obstacles, and minefields detected and exploited by the enemy or have their breaching operations impeded.

3. Land Operations. Barriers, obstacles, and mine warfare support the theater campaign or major operation by assisting the JFC in accomplishing assigned missions.

a. Resources. Most manmade barriers and obstacles are designed to enhance friendly fires or facilitate the maneuver of friendly forces by extending or improving the effectiveness of existing barriers and obstacles. Predominant resources to support ground operations are:

(1) Land Mines. Land mines are categorized as conventional or scatterable. Both categories provide antitank and antipersonnel capabilities.

(a) Conventional mines are the most commonly used and are normally emplaced, before the battle begins, in friendly terrain to support the main battle area. Many of these mines are activated by pressure or contact; however, developments in technology give some mines the capability to detect and kill a growing variety of targets that are not in close physical proximity to where the mine is located. These mines are laid by hand or mechanical means, buried or surface laid, and normally emplaced in a pattern to aid in recording. Mechanical laying may be restricted by terrain conditions. The emplacement of conventional minefields is normally time, manpower, and logistic intensive.

(b) Scatterable mines are emplaced without regard to classical patterns so that their locations cannot be precisely recorded. They are emplaced by ground mine-dispensing systems, artillery, helicopters, aircraft, or by hand. They are normally designed to self-destruct after a set period of time, commonly ranging from 4 hours to 15 days. Scatterable mines significantly reduce manpower requirements associated with mine warfare. Smaller and lighter, these mines offer a reduction in logistic requirements because of their reduced bulk and weight. Scatterable mines also make it possible to emplace minefields quickly and, importantly, to do so deep in the enemy's rear area of operations such as at an airbase, line of communication, air defense site, or an assembly area. Air-delivered scatterable mines allow greater flexibility to time-shift the available aircraft, helicopters, and artillery to interdict mobile enemy forces without the weapons system having to acquire enemy forces as is the case with direct attack munitions. This makes it possible to interdict enemy forces moving during darkness or poor weather without requiring sophisticated night and/or weather target acquisition capabilities. In certain circumstances, air-delivered scatterable mines also make it possible to attack enemy units without the delivery aircraft or system being exposed to the enemy's point air defenses, reducing the need for standoff munitions. These capabilities greatly enhance the ability to delay and confuse enemy forces, thereby creating

the opportunity to destroy the enemy with other fires. The main disadvantage of scatterable mine employment is that the most flexible and responsive means of delivery--air, helicopter, and artillery--have additional and perhaps more critical roles on the battlefield. Other disadvantages include the time and high number of artillery rounds or aircraft or helicopter sorties required to emplace a minefield and increased exposure of emplacing artillery to counterbattery fires and emplacing aircraft or helicopters to enemy air defenses. There is also the possibility of unduly endangering civilians in violation of the law of war if the mines' self-destruction is not reasonably synchronized with the tactical situation.

(c) Smart bombs equipped with appropriate power supplies, microprocessors, and sensors can also be used as mines. Upon delivery, such a mine can tunnel significant distances under the surface from where it entered without breaching the surface. Concealed under the surface, the mine can then explode when it detects the movement of vehicles or efforts to neutralize it.

(2) Demolition Obstacles. Demolition obstacles are created by the detonation of explosives. Demolitions are generally used to create tactical level obstacles. However, they can also be used to create operational obstacles such as the destruction of major dams, bridges, and railways and highways through built-up areas or terrain chokepoints. Demolition obstacles are classified as preliminary or reserved obstacles. Operational-level demolition obstacles may require lengthy completion time and large quantities of demolition materials because of the size and characteristics of the target.

(a) Preliminary demolition obstacles are those planned by subordinate commanders, are not considered critical to the JFC's plan, and can be detonated as soon as they are prepared or as the situation dictates.

(b) Reserved obstacles are those deemed critical to the JFC's or subordinate commander's plan and are detonated only when directed by the commander who designated them.

(3) Constructed Obstacles. Constructed obstacles are manmade, usually without the use of explosives. Typical tactical examples are barbed wire obstacles and tank ditches. Operational and strategic barriers and obstacles may also be constructed. Examples are fortified areas and lines. These large-scale obstructions generally require extensive time, manpower, equipment, and material. Constructed barriers and obstacles should be emplaced before hostilities or in areas not subject to observed fires, because construction personnel can be exposed to all types of enemy fire.

(4) Nuclear Effects. Large-scale obstructions may also be created from the effects of nuclear weapons, which may create large contaminated areas with massive tree blow-down, cratering, and rubble.

(5) Flame Field Expedients (FFE). When mines, barrier materials, or engineer resources are not available or are in short supply, the JFC may have to rely on field-expedient flame explosives for employment in place of obstacles and minefields. FFE can be hastily constructed from materials found on the battlefield, such as containers, fuel, and explosive devices. FFE can provide a quick, effective means for providing a limited offensive and defensive obstacle capability, because the exploding fireballs of flame can stun dismounted troops and degrade armored vehicles.

b. Offensive Employment. In the offense, the JFC, through the JFC staff, identifies priority locations and plans and coordinates the joint emplacement of barriers, obstacles, and minefields. Under some circumstances, the JFC may designate the systems that subordinate commanders utilize for emplacement. These barriers, obstacles, and minefields generally focus on isolating the battlefield, facilitating economy of force, enhancing overall force security, and blocking or delaying an enemy's withdrawal. During planning and deployment, care must be taken to ensure the mobility of the attacking force is not hindered. Key factors for consideration in offensive employment are:

(1) Current enemy situation, capabilities, intent, and probable courses of action.

(2) Accurate terrain analysis to determine where friendly forces are vulnerable to counterattack.

(3) Preplanning, deconfliction, and coordination with other components.

(4) C2 of obstacle and mine emplacement.

(5) Information flow to inform friendly forces of friendly and enemy barrier, obstacle, and minefield locations.

c. Defensive Employment. As in the offense, the JFC, through the JFC staff, identifies priority locations and plans and coordinates the joint emplacement of barriers, obstacles, and minefields. Under some circumstances, the JFC may designate the systems that subordinate commanders use for emplacement. The primary intent of defensive barrier, obstacle, and mine warfare employment is to degrade enemy capabilities by disrupting combat formations and delaying their movement, interfering with C2, and confusing enemy commanders. The secondary intent is to destroy or attrit enemy forces. Key factors for consideration in defensive employment are:

(1) Current enemy situation, capabilities, intent, and probable courses of action.

(2) Accurate terrain analysis to determine where friendly forces are vulnerable to enemy attack.

(3) Preplanning, deconfliction, and coordination with other components.

(4) C2 of obstacle and mine emplacement.

(5) Information flow to inform friendly forces of friendly and enemy barrier, obstacle, and minefield locations.

(6) Barrier, obstacle, and minefield emplacement must be integrated to complement the plan for defense.

(7) Conventional minefields and other large-scale obstacles that can be emplaced before the beginning of hostilities reduce the exposure to enemy fire. This also increases the time available to mass the large amount of supplies needed to construct the barriers, obstacles, and minefields.

(8) Employment of scatterable minefields throughout the battlefield should be preplanned. The choice of scatterable systems is mission dependent. Ground

emplaced mine scattering systems are best for rapidly emplacing large minefields in friendly controlled areas. Artillery, helicopter, or aircraft-delivered systems are employed throughout the battlefield. The appropriateness of artillery, helicopter, or aircraft delivery systems varies depending on the threat conditions and other mission priorities; however, organic systems should be employed whenever possible.

(9) The effects of scatterable mines in the defense should be analyzed with respect to self-destruct times. The timetable for friendly operations may be upset or cause friendly fratricide if the wrong self-destruct settings are used.

(10) Smoke can be used as a limited obstacle to channelize or slow advancing enemy forces. When combined with barriers, obstacles, and/or minefields, smoke can enhance the vulnerability of enemy forces by limiting their visual, target-acquisition, and intelligence-gathering capabilities.

d. Reporting, Recording, and Marking. The immediate reporting of friendly and enemy barrier, obstacle, and minefield locations to higher headquarters is essential. Emplacing units are responsible for immediate reporting of each obstacle and minefield, intent (i.e., barrier or obstacle plan), initiation and completion. Positive control and a rapid flow of information of mine emplacement are necessary. Both friendly and enemy minefields are recorded and marked because of their lethality to both friendly forces and noncombatants. Records and reports are critical to the immediate conflict and will become vital in facilitating post-hostilities clearance. Reporting, recording, and marking of minefields must be accomplished as follows:

(1) Reports. Once emplaced, minefields are lethal and unable to distinguish between friend and foe. For this reason, positive control and a rapid and continuous flow of information is necessary. Reports must be provided using methods that are consistent and well understood.

(a) Conventional Minefields. Three reports are required of tactical units emplacing minefields. They are: Report of Intention, Report of Initiation, and Report of Completion. The report formats are outlined in FM 5-102,

"Countertermobility." These reports are transmitted to the authorizing headquarters. Their contents are integrated with terrain intelligence and disseminated through intelligence channels.

(b) Scatterable Minefields. The speed and responsiveness of scatterable-mine employment require accurate, uniform, and timely reports. All information on scatterable-mine employment is immediately reported by the emplacing unit for dissemination to all affected units. To facilitate reporting and recording, a simple uniform procedure is used that combines the report and record into one document. This is the scatterable minefield record and report provided in FM 5-102, "Countertermobility." It is applicable to all Service delivery systems. In addition, if scatterable mines are to be emplaced within a land force commander's boundaries, regardless of FSCL placement, the emplacing unit immediately disseminates a Scatterable Minefield Warning Message (SCATMINWARN) to all potentially affected units that mines will be emplaced. The format for this warning message is contained in FM 5-101, "Countertermobility." Timely warning is essential because of the potential for a high unexploded mine or ordnance and/or dud rate and the potential for friendly fratricide and serious degradation of mobility. This warning is given during the planning phase of the operation and followed up with another warning giving the actual location immediately after emplacement.

(c) Enemy Minefields. As specified in the OPLAN, any detection, encounter, or knowledge of enemy minefields or mining activities by tactical units is reported to higher headquarters by the fastest means available. The report format used is contained in FM 5-101, "Countertermobility."

(d) Joint Minelaying Operations (MINEOPS). The MINEOPS report is used to exchange information between all components and joint headquarters. It provides the location, characteristics, and status of component Services' minelaying operations. It is also used to request, task, modify, report, plan, and approve minelaying operations, as appropriate. The report format

is specified by the Joint Interoperability Tactical Command and Control System (JINTACCS) and is contained in Annex 124, Chapter 3, "Joint User Handbook For Message Text Formats."

(e) Obstacles Other than Minefields. The Sensitive Information Report (SITREP) is used to provide information on barriers and obstacles (other than minefields) that may have a significant impact on current planning or operations. This report is used to exchange information between all Service and joint headquarters. The report format is specified by the JINTACCS and is contained in Annex 124, Chapter 3, "Joint User Handbook for Message Text Formats."

(2) Records. Minefield records must be prepared using methods that are consistent and well understood. The records must include all known information required in the specified formats. The level of information will vary based on friendly versus enemy emplaced minefields and the type of emplacing systems utilized. These records facilitate troop safety, future operations, and clearing operations when the hostilities are concluded.

(a) Conventional Minefields. As specified in the OPLAN, minefield records are prepared by the emplacing unit for each conventional minefield and forwarded to the appropriate staff proponent designated to maintain the records on file. All conventional minefields, except those emplaced as part of a unit's defensive perimeter, are recorded on DA Form 1355 (Minefield Record). Those minefields that are part of a unit's defensive perimeter are recorded using DA Form 1355-1R (Hasty Protective Minefield Record).

(b) Scatterable Minefields. The record of scatterable minefields is submitted as part of the minefield report, as discussed above.

(c) Retention of Records. A final repository for both friendly and enemy minefield reports must be designated in the appropriate OPLAN or OPORD annex or appendix. The theater combatant commander becomes the control repository if he retains the responsibility for land operations. If the theater combatant commander designates a

Service component commander as the joint force land component commander, then that commander becomes the command repository for all minefield reports and records. This becomes critical at cessation of hostilities. Once the war is over, the battlefield must be cleared. Clearance may be accomplished by several means: friendly forces, belligerent forces under the auspices of the United Nations Security Council, contract, or any combination of these.

(3) Marking. The marking of minefields is accomplished using methods that are consistent and well understood.

(a) Conventional Minefields. Minefields are marked as necessary to protect friendly forces. The fencing of minefields, both friendly and enemy, in friendly controlled areas is normally required.

(b) Scatterable Minefields. Minefields are marked as terrain is uncovered and, as possible, to protect friendly troops and noncombatants. Ground-emplaced scatterable minefields are marked by the ground component forces, which requires highly accurate positioning or survey data from the emplacing unit. However, it is unrealistic to expect artillery, aircraft, and helicopter emplaced minefields to be marked in the same manner as ground emplaced scatterable mines. Scatterable minefield marking may be unnecessary or impossible in many cases. Scatterable mines placed in enemy terrain are a prime example. For this reason, units operating in the vicinity of these scatterable minefields must know the time of emplacement, self-destruction duration period set, aim point or lateral boundaries of the safety zones and use extreme caution. The unit that finds the minefield is responsible for marking and reporting it. Immediate warning is essential because of the potential impact on friendly mobility and potential fratricide.

(c) Enemy Minefields. Minefields are marked and reported immediately when discovered to protect friendly troops and civilians.

4. Air Operations

a. Air-delivered scatterable mines can be used effectively in support of land force (LF) operations.

(1) Air-delivered scatterable mines can be used as part of a synchronized and integrated plan to support LF requirements. Further guidance on air operations in support of LF may be obtained from Joint Pubs 3-03, 3-03.1, and 3-09.

(2) Air-delivered scatterable mines can be used to disrupt and destroy enemy unit concentrations (including armored units); disrupt enemy field artillery (including surface-to-surface missiles) and air-defense systems movement and resupply; disrupt enemy helicopter forward-operating bases and fixed- and rotary-wing airfields; disrupt counterattacks and other enemy operations; protect the flanks of friendly exploiting forces; disrupt enemy logistic support; close breached friendly minefields or other obstacles; and disrupt enemy river crossing operations, coastal landings, and beach-head operations.

(3) Air-delivered scatterable mines may be used to support friendly rear area operations. They may be used to deny enemy airborne drop zones, air assault landing and pickup zones, or to augment the defenses of friendly facilities and LOCs.

(4) During the planning phase, coordination is required at the JFC level among the components to ensure that the use of air-delivered scatterable mines will not negatively impact or restrict current or future ground operations. The LF commander having the AOR in which air-delivered scatterable mines are to be employed is normally responsible for the coordination of their use with the scheme of maneuver to ensure unity of effort.

(5) During the execution phase, recording and reporting of air-delivered scatterable mines are essential at all levels of command. During the execution phase, the component commander tasked with delivering mines from aircraft is responsible to report the specifics of each air emplaced minefield to the JFC and other component commanders. This report provides the approving authority, target description, unit emplacing the mines, method of

emplacement, actual (not the planned) location of emplaced mines, date and time of emplacement, self-destruct duration period, aim point or lateral boundaries of the safety zone, unit or title of person submitting the report, remarks, and date and time of the report. Immediate reporting and warning messages before emplacement are essential because the potential for fratricide because of high unexploded mine or ordnance and/or dud rate. These reports and warnings are necessary to warn friendly forces and reduce the potential for friendly fratricide and serious degradation of ground force mobility.

(6) Air-delivered scatterable minefield records are essential to assist in clearing minefields after the termination of hostilities.

b. Air-delivered scatterable mines can be used effectively for counterair missions, both in airfield attacks and in suppression of enemy air defenses (SEAD).

(1) An objective of an attack on an enemy airfield is to delay or disrupt movements from that base. Air-delivered scatterable mines will extend the effect of the air attack by restricting ground movements on the base. The initial impact will be to either stop or slow aircraft movement until the taxiways and runways are cleared or else force the enemy to risk aircraft damage by encountering the mines. Air-delivered scatterable mines are also effective in preventing or delaying repairs on the damaged portions of the airfield.

(2) Similarly, the use of air-delivered scatterable mines during SEAD attacks will delay the repair and return to operational status by elements of enemy air defense systems. Actual destruction of entire portions of air defense systems may be difficult because of system redundancy and dispersed equipment. Use of mines will restrict access to those undestroyed portions of the system after an attack and prolong the loss of use of those portions destroyed and damaged. Mines will also cause repair personnel to expose themselves to additional attacks and risk essential electronic test and repair personnel and equipment.

c. Interdiction attacks, which include the employment of air-delivered scatterable mines, will increase the overall effectiveness of the attack. Scatterable mines

not only will delay repairs to strategic interdiction targets, but also will damage any vehicles or personnel that attempt to use or transit the interdiction target area. Mines will deny and delay access to storage and manufacturing facilities, holding areas, transshipment points, and power generating and transmission stations. Typically, the major damage on interdiction targets will come from weapons with an immediate effect. However, mixing even a few mines with other munitions will create uncertainty and fear among the repair crews or users of the target areas.

5. Maritime Operations. The NCA has tasked USCINCLANT, USCINCCENT, USCINCPAC, and USCINCEUR with the responsibility for the conduct of maritime mine warfare within their areas of responsibility and in support of other combatant commanders' maritime mine warfare requirements. These commanders have delegated the responsibility for planning maritime mine warfare operations to their Navy component commanders. The Navy component commander's mine warfare plan is integrated with the theater combatant commander's concept of operations. The theater combatant commander's intent and planning guidance provide direction on such matters as operational sequencing, critical targets, desired effects, priorities, and limitations. Using this information, the Navy component commander determines how best to use available assets and develops appropriate courses of action to support the theater plan. When approved by the theater combatant commander, the maritime mine warfare plan is implemented.

a. Planning. Navy component commanders have three ways in which to execute minefield planning. If time constraints are critical, Navy component staffs may conduct planning for quick-reaction minefields. If the minefield plan has been developed in advance and is appropriate for tasking, it may be used. If sufficient time is available, a minefield plan may be developed to meet a specific need.

(1) Minefield plans are developed for specific fields by the Navy's Commander, Mine Warfare Command (COMINEWARCOM), in response to naval component commander tasking. COMINEWARCOM planners work with the tasking commander to formulate mining scenarios consistent with strategic plans and intelligence estimates of anticipated enemy traffic and reaction capabilities. For each intended minefield, a detailed design is prepared for specified primary and secondary targets, using standardized formats, and submitted to the tasking commander for approval.

Upon acceptance, all necessary documentation is assembled into a numbered minefield planning folder (MFPF) that is distributed to fleet users to be maintained for future implementation.

(2) Once an MFPF is created, COMINEWARCOM continually evaluates and updates the plan as necessary. Individual MFPFs include minefield plans, mine requirements, and mine settings. These MFPFs provide a definitive basis for inventory planning, stockpile pre-positioning, and logistic support capabilities. In the event of hostilities, the preplanned minefields can be executed without further planning.

b. Objective. The aim of maritime mining is, in conjunction with other maritime and air assets, control of the sea. Mining can be used at all levels of war and across the operational continuum to achieve the objectives of friendly forces. Mining can delay and attrit enemy maritime forces and can deny them the unrestricted use of sea areas of passage. Barriers, obstacles, and minefields can also protect friendly harbors, channels, and seaways, as well as shorelines susceptible to enemy amphibious operations. For planning purposes, the minefield rather than the mine should be regarded as the weapon. The basic types of minefields are characterized as offensive, defensive, or protective.

(1) Offensive Mining. Offensive minefields, which include strategic fields, are those planted in enemy-controlled waters. These minefields pose the most direct threat to the enemy and, when completed, pose little threat to friendly forces. Offensive minefields are laid by aircraft or submarines because of their close proximity to the enemy. Offensive and strategic minefields consist of mines that have the most countermeasure resistance to complicate the enemy's MCM problem. The use of dummy mines or mine-like objects within a field can help this aim. Strategic minefields are long-term fields laid to deny enemy use of sea routes required to support and execute the enemy war effort. Strategic fields should be laid as soon as possible after commencement of hostilities and should be as heavily mined as assets permit, because replenishment may be extremely difficult.

(2) Defensive Mining. Defensive minefields are those employed in contested waters to intercept the

transit of enemy combatant forces. Because of defensive minefield locations, employment planning must consider neutral and friendly force transits in addition to those of the enemy. Minefield lanes may be planned to facilitate friendly force passage, but keep in mind that the same waters may be mined by enemy forces as well. For these reasons, defensive minefields should be laid with the utmost navigational accuracy.

(3) Protective Mining. Protective minefields are those employed in friendly waters to protect friendly ports, harbors, or inshore sea lines of communication. Protective minefields are the easiest to plan and lay and can use almost any type of maritime mine. Navigational accuracy for laying the field is vital because friendly forces will use the transit channels on a regular basis. Protective fields require that all users, including neutrals, be aware of or be led through the safe routes.

c. Resources

(1) Sea Mines. The sea mine is essentially an explosive charge in a casing that is laid underwater to destroy ships. Mines can be positioned on the seabed, moored at a predetermined case depth, or floated. The bottom mine is laid on the seabed and held in place by its own weight. The moored sea mine has a buoyant case and is held in place at a predetermined depth by an anchor. Floating sea mines are not held in place and are subject to tides, currents, and winds. Their use represents, in most situations, a violation of international law. Therefore, US doctrine does not provide for employment of floating mines. The three methods of activating mines are contact, influence, and controlled. Contact mines must be hit by a ship or submarine to be activated. Influence mines are activated by the acoustic, magnetic, seismic, electric potential, or pressure influences (singularly or in combination) from a ship or submarine. Controlled mines are activated from a remote control station when the target is within range.

(2) Allocation. Mines to support the mining plans are allocated to the Navy component commanders, who in turn prescribe which mines go to specific stockpiling sites. If the capacities of stockpile

sites are insufficient, the residual mines are stocked in the continental United States. The Chief of Naval Operations has designated COMINELWARCOM as the mine warfare technical advisor to the Navy component commanders. COMINELWARCOM maintains and monitors the mine stockpile and makes recommendations concerning readiness. When directed, the stored mines are assembled and prepared for laying.

d. US Air Force (USAF) Maritime Mining Support. USAF aircraft may be employed for maritime mining. Requirements are developed during the deliberate planning process. Upon conflict initiation, a theater combatant commander requiring USAF support above that available through the Air Force component commander will direct the request through the Chairman of the Joint Chiefs of Staff to the NCA. After approving the request, the NCA will task a theater combatant commander or the USCINELSTRAT to provide appropriate forces to the requesting combatant commander. Command relationships over the transferred forces will be as specified in the establishing directive. The theater combatant commander, through his or her joint force air component commander, if designated, will allocate sorties to the mining role as required to support the concept of operations. Planning support for mining missions will be coordinated by the supporting combatant commander with the theater planning staff, USAF and Navy component commanders, and COMINELWARCOM. Logistic support is provided in accordance with joint mining agreements between the US Air Force, US Navy, and the combatant commanders.

e. Operations. A minelaying operation consists of planning the minefield, preparing the material and personnel to conduct the laying, planning the laying mission, laying the mines, conducting follow-on surveillance and, if required, replenishing the minefield. The numbered fleet commanders coordinate mission planning and conduct mining operations as directed by the Navy component commander or JFC. COMINELWARCOM provides assistance to the numbered fleet commanders by providing planning, technical, and mine maintenance support personnel as required.

(1) Platform Advantages and Disadvantages.

Aircraft, submarines, and ships are all capable of laying mines if properly equipped. Although US doctrine does not provide for US surface ship laying of mines, many allied surface-ships possess this capability.

(a) Almost any aircraft capable of carrying bombs can carry sea mines. The advantages of using aircraft are speed, flexibility, range, invulnerability to enemy mines, and the ability to lay mines in all water depths. Disadvantages include less accurate mine laying and vulnerability to enemy surface and air defenses. This vulnerability requires dedicated air combat and enemy suppression assets to support mine-laying mission ingress or egress. Loss of surprise resulting from overt mine delivery may also be a disadvantage. However, this should be weighed against the immediate and powerful psychological impact that such an operation would be likely to produce.

(b) Submarines have the advantages of being able to conduct covert and accurate mining. Disadvantages include limited mine capacity, vulnerability to enemy mines, and the inability to operate in relatively shallow water.

(c) Surface ships have the advantages of long range, large mine capacity, and accuracy in laying. Disadvantages are slow movement and vulnerability to enemy reaction. No surface ship in the US Navy is currently equipped to lay mines.

(2) Mine and Minelayer Availability. The criteria for selecting the platform for a mining operation are probability of mission success, the importance of time, availability, and expected casualty rate. If heavy enemy opposition is expected, the use of submarine or aircraft layers might be indicated. Distance from mine storage to loading area and numbers and types of mines required must also be considered. All these factors will influence the ability to meet operational time lines and will determine the number of laying platforms required.

(3) Escort Requirements. The expected enemy reaction to the laying of a minefield, and the platforms to be used, will determine whether a covering force will be required. The covert laying of a field in an area out of immediate enemy defense range may not require cover. However, the laying of minefields by aircraft or ship in all but friendly waters will, in most cases, require protective

covering forces. As a result, in addition to the usual minelaying requirements, covering force requirements must be addressed.

(4) Replenishment and Neutralization Requirements. Consideration must be given to the length of time a minefield is required to remain effective. Enemy mine countermeasure (MCM) or natural causes may reduce mine life expectancy and necessitate replenishment of the minefield. Conversely, operational needs may require the passage of friendly forces through a mined area at a given point in time. In this case, the mines may be set to neutralize themselves at a specific time to permit the passage.

(5) Recording and Reporting Requirements. For joint US missions, the Joint Minelaying Operations (MINEOPS) report is used to exchange information between all components and joint headquarters. It provides the location, characteristics, and status of component minelaying operations. It is also used to request, task, modify, report, plan, and approve minelaying operations, as appropriate. The report format is specified by JINTACCS and is contained in Annex 88, Chapter 3, "Joint User Handbook for Message Text Formats." Naval Warfare Publication NWP 10-1-10, "Operational Reports," may be consulted for more specific information on required reports.

CHAPTER IV

COUNTERING ENEMY EMPLOYMENT

1. General. Enemy use of barriers, obstacles, and mines can affect the timing and strength of friendly operations. Success in countering enemy efforts is attained when friendly forces can maneuver without unacceptable damage or delay and reach the original objective beyond the obstruction. This chapter provides information and guidance on countering enemy barrier, obstacle, and mine employment in land and maritime environments.

2. Land Operations

a. General. Successful land operations depend on the freedom to maneuver. Terrain conditions, enemy tactics, integrated fires, barriers, obstacles, and minefields can limit friendly maneuver capability.

(1) Terrain can severely limit movement and maneuver. Ground forces, especially mechanized forces, are limited in movement by steep slopes, vegetation, dry and water-filled gaps, and a variety of other natural and manmade obstacles. Successful maneuver depends on the ability of commanders to move and deploy forces regardless of terrain.

(2) Successful enemy operations use fire, existing terrain, manmade obstacles, and minefields to restrict friendly freedom of maneuver. To counter this, friendly forces must be able to gain positional advantage and mass combat power at a critical time and place and to overcome any natural or manmade barriers, obstacles, and minefields.

b. Resources. Operations to counter the use of natural and manmade barriers, obstacles, and minefields by enemy forces may involve the employment of conventional, airmobile, airdropped, amphibious, or special operations forces. These operations are normally supported by combat engineer forces. Military advisory personnel or US units may also be employed to assist a friendly nation to counter mines and booby-traps or to enhance the mobility of HN forces. Specialized breaching assets include mine detection equipment; explosive devices and line charges; tank-mounted rollers, rakes, and plows; other combat engineer vehicles; and various types of rafts and bridges for dry or water gaps.

c. Planning and Operational Support

(1) Intelligence. Operational success in countering enemy use of barriers, obstacles, and minefields depends largely on the ability of the JFC to "see" the area of operations. Intelligence-gathering plans identify specifically tasked essential elements of information (EEI). In any operation where enemy barriers, obstacles, and minefields can interfere with friendly maneuver, information about them or areas expected to contain them become an EEI.

(a) Intelligence gathered by national and theater reconnaissance and surveillance means becomes the foundation for developing an analysis of the enemy's probable employment of barrier, obstacle, and minefield systems and fortifications. This information can verify enemy intentions, plans, and defensive strength and identify the mine types and fuses the enemy has employed. The timely availability of national and theater reconnaissance and surveillance will help the commander determine the best mix of breaching or clearing techniques, forces and equipment that offer the best chances for success.

(b) Obtaining intelligence on the enemy's use of barriers, obstacles, and minefields requires all available collection assets, ranging from national collection means down to tactical unit information that locates and identifies fortifications and obstacle emplacements. When operations commence, intelligence is continually verified and updated from actual barrier, obstacle, and minefield encounters.

(2) Deception. Deception is an important element in the successful breaching or bypassing of enemy barriers, obstacles, and minefields. The use of feints and raids, manipulation of electronic signals, use of dummy equipment, staging of engineer equipment, and the employment of other OPSEC measures will afford the breaching forces an added measure of security and enhance the probability of surprise. Deception plans, however, must be consistent with the theater deception themes.

(3) Logistics. Any operations to counter the enemy's use of barriers, obstacles, and minefields

may result in equipment damage or loss. Logistic support must be provided for the replacement of tactical bridging, combat engineer equipment, line charges and explosives, lane-marking materials, and any other materials to conduct and maintain breaching operations. In addition, stocks of artillery-delivered and air-delivered scatterable mines must be maintained to counter enemy attacks during friendly breaching operations. Logistic support must occur swiftly and not delay the continuing movement of forces or critical supplies. These conditions must be thoroughly anticipated in the planning phase.

d. Planning Considerations

(1) General. The JFC is concerned with identifying large-scale natural and manmade barriers, obstacles, and minefields that provide the enemy a distinct operational advantage.

(a) Breaching major barriers, obstacles, and minefields requires long-range planning well in advance of encountering the obstruction. An early decision on logistic support requirements is important to ensure availability of special equipment and material.

(b) Major barriers, obstacles, and minefield systems can require a significant expenditure of time if they are to be breached or eliminated rather than bypassed. Whenever it is operationally sound, barriers, obstacles, and minefields should be bypassed.

(c) Continual emphasis is placed on early detection and reporting of barriers, obstacles, and minefields. It is also important to determine the type and quality of mines employed to ensure that suitable countermeasure measures are employed.

(d) Successful breaching operations require the conduct of special training and rehearsals.

(e) Suppress, obscure, secure, and reduce (SOSR) are the breaching fundamentals that must be applied to ensure success when breaching against a defending enemy. Suppression is the focus of all available fires on enemy personnel, weapons, or equipment to prevent effective fires

on friendly breaching, assault, and support forces. Obscuration hampers enemy observation and target acquisition and conceals friendly activities and movement. Securing by friendly forces of the breaching site prevents the enemy from interfering with the breaching and passage of the assault force through the lanes created. Reduction means creating lanes through or over the obstruction to allow the attacking force to pass.

(f) The JFC may designate the selection of breaching zones for major barriers, obstacles, and minefield systems. This designation is based upon defensibility, ability to maneuver and deploy the force, and capability to continue the operation.

(g) Operational vulnerability may be reduced through crossing on a wide front (limited only by the terrain and quantities of breaching equipment available), crossing in as many places as possible, crossing by night or in poor visibility or using obscurants, and employing a deception plan.

(2) Offensive Planning Considerations

(a) Continuous reconnaissance and intelligence is required to verify and update the assessments provided by prior intelligence.

(b) Early identification of enemy and natural obstructions may allow the JFC to avoid or minimize the number and severity of enemy barriers, obstacles, and minefield systems and to limit the number of friendly casualties.

(c) Emphasis is placed on maintaining the momentum of the attack through freedom of movement and maneuver. The obstruction is seldom the objective but normally is an impediment to securing the true operational objective. Maintaining momentum requires the attacking force to quickly pass through or around barriers, obstacles, and minefields. Emphasis is placed on the capture of major roads, bridges, passes, and other terrain features essential for mobility to enhance future operations. Air assault and airborne

forces, reinforced with engineer units, may effectively accomplish this mission.

(d) Advance planning is necessary to coordinate the transfer of information concerning barriers, obstacles, and minefields to follow-on engineer units as they are breached. This planning is necessary to widen and mark assault force breaches and to clear and mark additional routes for follow-on forces.

(e) Planning must also address clearing and reduction operations of friendly and enemy barriers, obstacles, and minefields to allow movement of combat support and combat service support elements.

(f) Successful breaching of enemy barriers, obstacles, and minefields requires special planning and support. When possible, the breach will be made as a continuation of the attack, across a broad front to reduce congestion and vulnerability. However, the availability of breaching assets, crossing sites, and combat power may dictate crossing on a narrow front. If a deliberate breach is required, an early decision is mandatory to obtain the necessary logistic support and concentration of combat power. Plans should anticipate the need to breach enemy barriers, obstacles, and minefields employed in depth. Deceptive and covering smoke provide an added measure of security while breaching by denying intelligence to the enemy concerning where the breach will occur and impeding enemy target acquisition.

(g) Logistic support must facilitate both the continuation of the offense and the transition to the defense, if necessary.

(3) Defensive Planning Considerations. In the defense, friendly counterattacks and spoiling attacks must not be impeded by barriers and obstacles throughout the defensive area. Planning must take into consideration the need to maintain freedom of movement and maneuver of friendly forces.

e. Planning Sequence. The planning sequence begins with the JFC's detailed analysis of missions, forces available, terrain, enemy forces, and time. Emphasis is

placed on the integration of barrier, obstacle, and minefield planning with the development of operational plans.

(1) Portions of the battlefield containing natural operational-level barriers and obstacles suitable for reinforcement by the enemy are identified through terrain analysis.

(2) The terrain should be evaluated from both friendly and enemy perspectives. The results of the terrain analysis are integrated into the development of the concept of operations.

(3) The early analysis of operational barriers and obstacles includes estimates from the component commanders on how best to support the JFC's concept of operations.

(4) The JFC issues planning guidance for countering enemy barriers, obstacles, and minefields. The guidance may include priority of engineer support, fire support, logistic support, C2 measures, and sequencing of breaching operations. Guidance provides the focus for intelligence and targeting and forms the basis for staff estimates and the development of courses of action.

(5) During plan formulation, emphasis is placed on minimizing the effectiveness of existing enemy barriers, obstacles, and minefields. Emphasis is also placed on maximizing opportunities to achieve a bypass or an in-stride breach. For each barrier, obstacle, and minefield, a determination is made of the possible or probable enemy actions when they are encountered. This will assist in identifying friendly options for offensive action.

(6) Once the JFC plan is approved, supporting and subordinate commanders finalize their plans.

f. Operations

(1) Employment. Breaching a major barrier, obstacle, or minefield is a difficult and risky task. Forces must execute breaching aggressively. Forces and supporting fires are synchronized to minimize losses and enhance rapid passage through the obstruction.

(a) Preparation. Before a major counter-obstacle operation, units will require rehearsals and training in counterobstacle operations. Breaching operations require special equipment and materiel that may require time to obtain and prepare for employment.

(b) Detection. Efforts must be made to detect minefields and other major obstacles using all available means. An example is the use of imaging devices such as thermal sights. When air temperature changes, mines will show up as differing in temperature from the surrounding terrain. Other common indicators include mines, minefield markers, locations of enemy defensive positions, evidence of terrain modification, major natural obstacles, and other manmade obstacles.

(c) Reconnaissance. After detection, the characteristics and limitation of enemy barriers, obstacles, and minefields must be determined using both ground and aerial reconnaissance and remote imagery.

(d) Bypass. Although bypass is an attractive option, apparent bypass routes around major obstacles and minefields may be part of the enemy's plan to turn and disrupt friendly forces.

(e) Breaching. When the JFC decides that it is necessary to breach a major obstacle or minefield, either a combined arms in-stride, deliberate, assault, or covert breaching operation may be directed.

1. In-Stride Breaching. In-stride breaching is a very rapid technique using standard actions on contact and normal movement techniques. It consists of preplanned, well-trained, and well-rehearsed breaching actions and reduction procedures by predesignated combined arms elements. The in-stride breach takes advantage of surprise and initiative to get through the obstruction with minimal loss of momentum. It maintains the momentum of the attack by denying the enemy time to mass forces to cover the obstacle or minefield. A JFC conducts an in-stride

breach against a weak defender; lightly defended or very simple barriers, obstacles, and minefields; or when an unclear situation makes it necessary for subordinate units to be capable of independent breaching operations to accomplish the mission.

2. Deliberate Breaching. Deliberate breaching is a scheme of maneuver specifically designed to cross a heavily defended, extensive, or complex enemy barrier, obstacle, or minefield to continue the mission. A deliberate breaching operation may be required if an in-stride breach is not feasible or has failed. Deliberate breaching operations are characterized by thorough reconnaissance, detailed planning, extensive preparation, and explicit rehearsal. C2, timing, and deception are critical.

3. Assault Breaching. Assault breaching is specifically designed to penetrate an enemy's protective barriers, obstacles, and minefields and destroy the defender in detail.

4. Covert Breaching. Covert breaching is used by dismounted forces during limited visibility. It is silently executed to achieve surprise and minimize casualties. It relies on stealth, manual reduction, and dismounted maneuver.

(2) Recording and Reporting. Any knowledge, detection, or encounter of enemy barriers, obstacles, or minefields is reported immediately through appropriate channels and incorporated in intelligence data.

(a) Spot reports provide the tactical commander the initial source of barrier, obstacle, and minefield intelligence. This information is reported to higher headquarters by the fastest means available.

(b) As specified in the OPLAN, detailed information on enemy minefields is transmitted to the appropriate Service component or joint

force headquarters, where they are maintained on file. The format used for this information is the Enemy Minefield Report contained in FM 5-101, "Mobility."

(c) The Joint Mine Countermeasures Operations (MCMOPS) report is used to exchange tactical information between all components and joint headquarters. It provides the location and status of component Service MCM operations, including breaching and clearing. It is also used to request, task, plan, report, modify, and approve MCM operations, as appropriate. The report format is specified by JINTACCS message and is contained in Annex 79, Chapter 3, "Joint User Handbook For Message Text Formats."

(3) Marking. Marking is necessary to define the limits of the breached path, lane, or gap, as well as the boundaries of the mined area. Proper marking is critical to the safe and swift movement of units and to protect friendly forces and civilians.

(4) Minefield Clearing. Minefield clearing is the total elimination or neutralization of mines from a defined area.

(a) Breaching operations are usually conducted under enemy fires. However, clearing operations are not conducted under fire.

(b) A limited clearing operation can be conducted by follow-on engineers and explosive ordnance disposal (EOD) detachments after the force conducting the breaching operation has reduced the minefield and secured the area. It may also be conducted to eliminate all mines in a minefield previously identified, reported, and marked in a friendly area of operations that hinders mobility or is a hazard to friendly forces or civilians.

(c) Before clearing operations commence, theater records of both friendly and enemy minefields installed in the area and appropriate intelligence reports should be provided to the clearing unit.

(d) Minefields suspected of containing chemical mines are marked and bypassed. Enemy use or

suspected use of chemical weapons must be reported as a suspected violation of international law and the law of war.

(e) Post-hostilities clearing operations are not conducted by US units. US units clear mines only as required for military operations. Clearance after cessation of hostilities may be provided by other friendly forces, belligerent forces under the auspices of the UN Security Council, civilian contract workers, forces from the country concerned, or a combination of any of these. US forces may provide technical advice, training, and other assistance, as appropriate.

3. Maritime Mine Countermeasures. Maritime MCM include all actions undertaken to prevent enemy mines from altering friendly forces' maritime plans or operations. MCM reduce the threat and effects of enemy-laid sea mines on friendly naval force and seaborne logistic force access to and transit of selected waterways.

a. General. MCM are divided into two broad areas: proactive and enabling MCM.

(1) Proactive MCM. The most effective means of countering a mine threat is to prevent the laying of mines. Proactive MCM destroy enemy mine manufacturing and storage facilities or mine laying platforms before the mines are laid. Although an adjunct of mine warfare, proactive MCM operations are not normally conducted by mine warfare forces. Therefore, staff MCM planners must ensure that enemy mine layer, mine storage and, ultimately, mine production facilities and assets are considered for inclusion on joint target lists.

(2) Enabling MCM. Enabling countermeasures are designed to counter mines once they have been laid. Some enabling MCM operations are undertaken following the termination of conflict solely to eliminate or reduce the threat to shipping posed by residual sea mines. However, most enabling MCM operations are undertaken during conflict to permit (enable) other maritime operations, such as power projection, to be conducted. Enabling MCM includes passive and active MCM.

(a) Passive MCM reduce the threat from emplaced mines without physically attacking the mine itself. Three primary passive measures are practiced: localization of the threat, detection and avoidance of the minefield, and risk reduction.

1. Localization of the threat involves the establishment of a system of transit routes, referred to as Q-routes, which will be used by all ships in order to minimize exposure in potentially mined waters. Establishment of transit routes should be one of the first steps taken by MCM planners, if the routes have not been previously designated, to minimize exposure of shipping and permit concentration of active MCM efforts.

2. Detection and avoidance of minefields can be accomplished by employing intelligence information or organic MCM forces. When the location has been established, shipping may be routed around the area.

3. Risk reduction is primarily practiced by individual ships rather than planned and executed by MCM forces. Risk may be reduced by controlling the degree of potential interaction with a mine sensor. Against contact mines, a reduction in draft and posting additional lookouts can reduce the number of mines with which the ship's hull might make contact. Influence mines can be denied the required activation signals by controlling the ship's emissions. Using built-in magnetic field reduction equipment, silencing a ship to minimize radiated noise, or using minimum speeds to reduce the pressure signature of a ship are examples of operational risk reduction. Other types of risk reduction involve the enhancement of ship survivability in the event of mine detonation. Such measures can involve increased structural integrity and improved damage-control capability.

(b) Active MCM are applied when passive measures alone cannot protect traffic. This entails physical interference with the explosive

functioning of the mine or actually destroying it. Minehunting and minesweeping are the primary techniques employed in active MCM. Both require detailed intelligence and extensive planning by the MCM commander to counter the mine threat effectively.

1. Minehunting. Minehunting involves the use of mine detection and neutralization systems to counter individual sea mines. Minehunting is preferred to minesweeping if time permits. High-resolution sensors are used to locate mines. When located, remote-controlled vehicles or EOD divers visually identify the mines and plant charges to destroy them. Minehunting poses less risk to MCM forces, covers an area more thoroughly, and provides a higher probability of mine detection than minesweeping.

2. Minesweeping. Minesweeping is conducted by either surface craft or aircraft and involves the streaming or towing of mechanical, influence, or explosive sweep systems. Mechanical sweeping employs specially equipped cables to sever moored mine cables so that the mines float to the surface. The mines are then destroyed by explosive charge upon approval of the local commander. Influence sweeping involves the use of towed or streamed devices that emit acoustic, magnetic, or combination acoustic-magnetic signals to trigger influence-type mines. Explosive sweeping causes sympathetic detonations in, damages, or displaces the mine. At present, the only method capable of activating a sophisticated pressure mine is the use of an actual ship. This is not a practical, routine sweep method; however, most pressure mines are encountered in very shallow waters and are susceptible to minehunting.

b. Intelligence Support

(1) Intelligence Gathering. Before maritime MCM operations, intelligence may indicate the types, quantities, or locations of mine storage sites. This information enables the surveillance of mine storage

sites with overhead sensor systems and human intelligence assets to detect movement of mine assets. All source-derived intelligence of mine movement to minelaying platforms and the subsequent movement of the minelaying platforms can provide advance information on the type, size, and location of enemy minefields. Where mining is a possible threat, particularly in areas of hostilities other than war, tracking and dedicated intelligence collection against this target must begin early and be regular enough to provide confident estimates of mine activity. A joint MCM tracking team could be established to focus collection efforts in this area.

(2) Mine Exploitation. A key to countering any mine is a detailed knowledge of the mine sensor and targeting circuitries. All-source derived intelligence on the enemy minelaying operation can aid in determining the type of sensor and style of target processing used. However, more accurate data can be acquired by actually obtaining one of the mines for exploitation. This acquisition may be accomplished by purchasing the mine on the open market or, preferably, by recovering a laid mine to determine mine modifications and mine settings. Exploitation is most effective when conducted early in the MCM effort or upon initial confirmation of an enemy minefield.

c. Planning Considerations. The MCM planning process starts with an estimate of the situation and a mission statement and results ultimately in production of an MCM tasking order. Some aspects of the mission definition must be provided by the tasking commander.

(1) Objectives. The mission statement includes an objective for active MCM, an acceptable risk factor, and a specific operation area. In some cases, a measure of the effectiveness of the operation will be required. The MCM commander must choose a specific objective from one of the following:

(a) Exploratory. The objective of exploration is to determine whether or not mines are present. This is usually the first objective when an enemy minefield is suspected. If no mines are found, the confidence level of search accuracy is the measure of effectiveness. If mines are found, the operation usually transitions to a new objective.

(b) Reconnaissance. Reconnaissance operations are designed to make a rapid assessment of the limits of a mined area and the estimated number and types of mines present. The measure of effectiveness is normally a value judgment based on the degree of coverage for a given area using an established probability of detection rate.

(c) Breakthrough. The breakthrough objective is directed when a rapid operation is required to open channels and staging areas for an amphibious operation or break-in and/or break-out of a port. Circumstances in which this objective would be selected include insufficient time or forces for clearance operations, requirement for traffic to transit within a short time, and expectation of mines to be armed with low ship counter settings. For breakthrough operations, the tasking commander should indicate the amount of time available for MCM operations. The MCM commander should respond with the following estimates:

1. Initial threat to traffic that will remain following the MCM operations that can be conducted in the available time.

2. Additional reduction of the threat achievable if more time were provided.

(d) Attrition. Attrition operations call for continuous or frequent MCM efforts to keep the threat of mines to ship traffic as low as possible when traffic must continue to transit the mined waters for a comparatively long period of time. Attrition is employed when mines cannot be quickly cleared because of factors such as enemy minefield replenishment or use of mines with arming delay or high ship counter settings. The tasking commander should provide the MCM commander with a desired initial threat to shipping goal and require reporting of estimated attainment of that goal.

(e) Clearance. The objective of clearing is to attempt to remove all mines from the assigned area. Before it is difficult to ensure that all mines are cleared, a percentage goal is assigned for mine removal to permit the MCM commander to measure and report progress. For a clearing

objective to be appropriate, MCM forces must be adequate to do the job in the time available, traffic through the field must be delayed until the clearance is completed, enemy replenishment of the field must be unlikely, and the majority of the mines must be vulnerable to at least one form of active MCM. Clearing assumes that the mine types are known or can be reasonably estimated. A special case of the clearing objective is limited clearing, in which a minefield is cleared of only specified mine types. Limited clearing may be directed if there are inadequate MCM forces to conduct clearing operations in the time available or if available countermeasures are not effective against all mine types in the field. If the characteristics of the mines in a field can only be assumed, partial clearing can be tailored to the type of ship that must transit the field.

(2) Risk Directives. Some MCM techniques are inherently risky when used against certain mine types. To determine the proper MCM technique to employ, the MCM commander must, in addition to an objective, be given some indication of the maximum acceptable degree of risk to MCM forces. When operations are constrained by time, a somewhat greater degree of risk must be accepted to accomplish the objective.

(3) MCM Asset Availability. MCM tactics are determined by the time and assets available. The time required to move MCM units to the minefield area as opposed to the time available for completion of MCM operations is a key determination. A primary mission of airborne MCM forces is to provide short notice, rapid response to any mining threat. These forces sacrifice some degree of effectiveness and stamina to maximize response capability. On the other hand, surface MCM forces are more effective but, because of relatively slow transit speeds, have long response times. For long distances, heavy lift ships can transport surface MCM units to the area of operations more quickly than the MCM ships could transit on their own. Whenever time and circumstances permit, air MCM assets should be used for precursory minefield sweeping before operating surface MCM assets. This provides greater safety margins for surface craft, which lack the helicopter's relative immunity to mines.

(4) Amphibious Operations. Early, detailed requirements should be provided by the commander amphibious task force (CATF) to the MCM commander to facilitate planning. MCM considerations include the size of AOA in comparison to the number of available MCM assets, slow MCM ship transit times to the AOA, the rate of MCM operations required to meet established deadlines, and requirements to protect MCM operations against hostile threats. In addition to conventional MCM forces, Navy special warfare forces are employed in amphibious operations to locate, destroy, and/or neutralize enemy barriers, obstacles, or minefields placed in or on the shallow water approaches to landing beaches. Shallow water surf zone mines emplaced between the high-water mark and a depth of 20 feet pose a serious threat to the landing force. It is presently very difficult to locate and destroy or breach and mark lanes through these minefields. In addition, enemy observation of friendly MCM operations may compromise tactical surprise. Therefore, MCM activity in amphibious operations will probably focus more on rapid, "brute force" lane-breaching techniques than on conventional MCM procedures.

(5) Support Requirements. Deployed MCM ships and helicopter and EOD detachments are not self-sustaining. Communications; ordnance; recompression chamber; supply; personnel support; and petroleum, oils, and lubricants must be provided for these units. In addition, ships will require magnetic and acoustic calibration range services and intermediate maintenance support. Helicopter units will require hangar space, maintenance, and ground support equipment. Support may be provided to ships and EOD units by an assigned MCM support ship or an adjacent shore facility. Helicopter support may be provided by an adjacent airfield or by an air-capable MCM support ship.

d. Organizational Support

(1) Maritime Defense Zone Commands. When activated, the maritime defense zone commanders Atlantic and Pacific are responsible to USCINCLANT and USCINCPAC, respectively, for integrated maritime defense operations, including mining and MCM, within their respective US coastal and inland waterway regions. Operational forces will be allocated by the fleet commanders and Coast Guard area commanders.

(2) Commander, Mine Warfare Command (COMINEWARCOM). COMINEWARCOM is responsible to the Chief of Naval Operations for oversight of Navy mine warfare programs and, through the Commander in Chief, US Atlantic Fleet, for the training and readiness of mine warfare forces. These forces, which include MCM commanders and staffs, are prepared to deploy on short notice to support any unified command, as required. COMINEWARCOM supports commanders of fleets, task forces, and unified and specified command in planning MCM exercises and operations.

e. Operational Considerations. When an enemy minefield is encountered, a number of decisions must be made. If the minefield is not on a primary sea line of communication or operational route, the best action may be to warn and divert shipping around the area. If the minefield is in an essential area, the decision must be made as to what type of MCM to employ. The number and types of mines, availability of MCM forces, and time available will determine the type of MCM to employ. It may also be possible to counter a minefield in a critical area by sending forces over it (e.g., vertical assault or vertical resupply) rather than through or around it.

(1) Integrated Operations. Integrated MCM operations make optimum use of all available MCM assets and tactics to meet the needs of the mission. Consideration must be given to both mutual support and mutual interference. The MCM commander must consider the potential reduction of risk that could be made possible through the sequential application of an integrated force. Support from MCM helicopters may significantly reduce the risk to surface MCM vessels if shallow moored mines and sensitive influence mines are swept before the surface MCM employment. However, if influence sweeping is performed concurrent with EOD operations, there may be a serious risk to EOD divers in close proximity as a result of sweep-generated mine detonations. The MCM commander must plan operations to exploit the strong capabilities of each MCM element and schedule events to accomplish the mission in the fastest manner consistent with the risk directive.

(2) Multinational Force Coordination. Enemy mining frequently results in a multinational MCM effort. It is possible to have MCM operations conducted by several national forces in close proximity without having a single command structure. To conduct such

operations safely and efficiently, agreements to coordinate AORs and communications, as a minimum, must be established to prevent mutual interference.

(3) Q-Routes and Route Survey. A Q-route is a preplanned system of dormant shipping lanes that can be activated partially or totally by the area commander after it has been determined that mining has occurred. The Q-route minimizes the area an MCM commander has to clear to provide safe passage for shipping and reduces the force required to conduct MCM. Route survey operations are conducted along Q-routes during peacetime for several purposes. First, a survey is conducted to determine if the route is favorable for minehunting. If it is not, a change of route will be recommended. Next, the established route is surveyed to collect environmental data with which to support wartime operations. The route is then periodically surveyed to locate, evaluate, and catalog mine-like objects. This data base can be used in conflict to determine if mining has occurred and, if it has, to reduce the time required to clear the route.

(4) Reporting Requirements. The Joint Mine Countermeasures Operations (MCMOPS) report is used to exchange MCM tactical information between all components and joint headquarters. It provides the location and status of Service component mine countermeasures operations, including breaching and clearing. It is also used to request, task, plan, report, modify, and approve mine countermeasures operations, as appropriate. The report format is specified by JINTACCS message and is contained in Annex 114, Chapter 3, "Joint User Handbook for Message Text Formats."

APPENDIX A

REFERENCES

1. Joint Publications

- a. Joint Pub 0-1, "Basic National Defense Doctrine."
- b. Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)."
- c. Joint Pub 1-01, "Joint Publication System: Joint Doctrine and Joint Tactics, Techniques, and Procedures Development Program."
- d. Joint Pub 1-02, "DOD Dictionary of Military and Associated Terms."
- e. Joint Pub 2-0, "Doctrine for Intelligence Support to Joint Operations."
- f. Joint Test Pub 3-0, "Doctrine for Unified and Joint Operations."
- g. Joint Pub 3-02, "Joint Doctrine for Amphibious Operations."
- h. Joint Pub 3-02.1, "Joint Doctrine for Landing Force Operations."
- i. Joint Pub 3-03, "Doctrine for Joint Interdiction Operations."
- j. Joint Pub 3-04, "Doctrine for Joint Maritime Operations (AIR)."
- k. Joint Pub 3-05, "Doctrine for Joint Special Operations."
- l. Joint Pub 3-06, "Doctrine for Joint Riverine Operations."
- m. Joint Pub 3-07, "Doctrine for Joint Operations in Low Intensity Conflict."
- n. Joint Pub 3-09, "Doctrine for Joint Fire Support."
- o. Joint Pub 3-11, "Doctrine for Joint Chemical Operations."

- p. Joint Pub 3-54, "Joint Doctrine for Operations Security."
- q. Joint Pub 4-0, "Doctrine for Logistics Support of Joint Operations."
- r. Joint Pub 5-0, "Doctrine for Planning Joint Operations."
- s. Joint Pub 5-00.2, "Joint Task Force Planning Guidance and Procedures."
- t. Joint Pub 5-03.2, "Joint Operation Planning and Execution System (JOPEs)," Volume II, Planning and Execution Formats and Guidance.

2. Multiservice

- a. NWP 9(A)/FMFM 1-10, "The Commander's Handbook on the Law of Naval Operations."
- b. NWP 13(A)/FMFM 7-5, "Doctrine for Navy/Marine Corps Joint Riverine Operations."
- c. TRADOC Pam 525-43/TAC Pam 50-27, "Military Operations: US Joint Operational Concept and Procedures for Coordination of Employment of Air Delivered Mines (J Mine)."

3. US Army

- a. FM 3-100, "NBC Defense, Chemical Warfare, Smoke, and Flame Operations."
- b. FM 5-15, "Field Fortifications."
- c. FM 5-25, "Explosives and Demolitions."
- d. FM 5-34, "Engineer Field Data."
- e. FM 5-71, "Regimental Engineer Combat Operations."
- f. FM 5-71-100, "Engineer Support to Close Combat Heavy Forces."
- g. FM 5-100, "Engineer Combat Operations."
- h. FM 5-101, "Mobility."
- i. FM 5-102, "Countermobility."

- j. FM 5-103, "Survivability."
- k. FM 6-20, "Fire Support in the AirLand Battle."
- l. FM 6-20-30, "Fire Support for Corps and Division Operations."
- m. FM 20-32, "Mine/Countermine Operations."
- n. FM 27-10, "Law of Land Warfare."
- o. FM 71-100, "Divisions Operations."
- p. FM 90-2, "Battlefield Deception."
- q. FM 90-13-1, "Combined Arms Breaching Operations."
- r. FM 100-5, "Operations."
- s. FM 100-7 (Draft), "The Army in Theater Operations."
- t. FM 100-15, "Corps Operations."
- u. FM 101-5-1, "Operational Terms and Symbols."
- v. TRADOC Pam 525-18, "Military Operations: US Army Operational Concepts for Countermining Operations."
- w. TRADOC Pam 525-19, "USA Operational Concept for Land Mine Warfare."

4. US Navy

- a. NWP 1(A), "Strategic Concepts of the US Navy."
- b. NWP 9(A), "Commander's Handbook on the Law of Naval Operations."
- c. NWP 10-1, "Composite Warfare Commander's Manual."
- d. NWP 11(E), "Naval Operational Planning."
- e. NWP 15(C), "Naval Special Warfare."
- f. NWP 15-3 (A), "Explosive Ordnance Disposal."
- g. NWP 22-1, "The Amphibious Task Force Plan."
- h. NWP 27-1-1, "Mine Countermeasures Planning and Procedures."

- i. NWP 27-1-2, "Mine Countermeasures Planning and Procedures (Data Appendices)."
- j. NWP 27-2(A), "Mine Countermeasures Operations."
- k. NWP 27-3(B), "Airborne Mine Countermeasures Operations."
- l. NWP 27-4(A), "Mining Operations."
- m. NWP 27-5(A), "Minefield Planning."
- n. NWP 39, "Naval Coastal Warfare Doctrine."
- 5. US Air Force
 - a. AFM 1-1, "Basic Aerospace Doctrine."
 - b. AFM 2-XC (Seventh Draft), "Tactical Air Operations."
 - c. TACM 2-1, "Tactical Air Operations."
- 6. US Marine Corps
 - a. FMFM 1, "Warfighting."
 - b. FMFM 1-1, "Campaigning."
 - c. FMFM 3-1, "Command and Staff Action," with change 1 and change 2.
 - d. FMFM 4, "Combat Service Support."
 - e. FMFM 4-4, "Engineer Operations."
 - f. FMFM 6-1, "The Marine Division."
 - g. FMFM 6-18, "Techniques of Fire Support Coordination."
 - h. FMFM 13, "MAGTF Engineer Operations."
 - i. OH 6-1, "Ground Combat Operations."
 - j. OH 6-1A, "Ground Combat Element Command and Control."
- 7. NATO
 - a. ATP 1(C), Vol I, "Allied Maritime Tactical Instructions."

- b. ATP 6A (Navy) (Air), Vol I, "Allied Doctrine of Mine Warfare, Policies, and Principles."
- c. ATP 8(A), "Doctrine for Amphibious Operations."
- d. ATP 24(A) (Navy), "Tactical Instructions and Procedures for the Conduct of Mine Warfare Operations."
- e. ATP 37, "Supporting Arms in Amphibious Operations."
- f. STANAG 1242, "Allied Doctrine of Mine Warfare - Policy and Principles."
- g. STANAG 1257, "NATO Mine Delivery Systems."
- h. STANAG 1323, "NATO Minefield Planning Guidance."
- i. STANAG 1400, "Mining and Minelaying - Planning and Evaluation, Tactics, and Execution."
- j. STANAG 2036, "Land Minefield Laying, Marking, Recording and Reporting Procedures."
- k. STANAG 2096, "Reporting Engineer Information in the Field."
- l. STANAG 2889, "Marking of Hazardous Areas and Routes Through Them."
- m. STANAG 2963, "Co-ordination of Field Artillery Delivered Scatterable Mines."
- n. STANAG 2990, "Principles and Procedures for the Employment in Land Warfare of Scatterable Mines With a Limited Laid Life."
- o. STANAG 2991, "NATO Glossary of Combat Engineer Terms and Definitions-AAP-19."

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APPENDIX B

USERS EVALUATION REPORT
ON JOINT PUB 3-15

1. Users in the field are highly encouraged to directly submit comments on this pub. Please fill out and send in the following: Users' POC, unit address, and phone (DSN) number.

2. Content

a. Does the pub provide a conceptual framework for the topic? _____

b. Is the information provided accurate? What needs to be updated? _____

c. Is the information provided useful? If not, how can it be improved? _____

d. Is this pub consistent with other joint pubs? _____

e. Can this pub be better organized for the best understanding of the doctrine and/or JTTP? How? _____

3. Writing and Appearance

a. Where does the pub need some revision to make the writing clear and concise? What words would you use? _____

b. Are the charts and figures clear and understandable? How would you revise them? _____

4. Recommended urgent change(s) (if any). _____

5. Other _____

6. Please fold and mail comments to the Joint Doctrine Center (additional pages may be attached if desired) or FAX to DSN 564-3990 or COMM (804) 444-3990.

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FROM:

JOINT DOCTRINE CENTER
BLDG R-52 1283 CV Towway, Suite 100
NORFOLK, VA 23511-2491

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GLOSSARY

PART I--ABBREVIATIONS AND ACRONYMS

AOA	amphibious objective area
AOR	area of responsibility
ATP	allied tactical publication
C2	command and control
CAS	close air support
COMINEWARCOM	Commander, Mine Warfare Command
EEI	essential elements of information
EOD	explosive ordnance disposal
FASCAM	family of scatterable mines
FFE	flame field expedients
FSCL	fire support coordination line
JFACC	joint force air component commander
JFC	joint force commander
JINTACCS	joint interoperability of tactical command and control systems
JOA	joint operations area
JRCC	joint rescue coordination center
MCM	mine countermeasures
MINEOPS	joint minelaying operations
MFPE	minefield planning folder
NCA	National Command Authorities
NWP	naval warfare publication
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
ROE	rules of engagement
SCATMINEWARN	scatterable minefield warning
SEAD	suppression of enemy air defenses
SITREP	situation report
SOF	special operations forces
SOP	standard operating procedure
SOSR	suppress, obscure, secure, and reduce

UCP	unified command plan
UN	United Nations
UNAAF	Unified Action Armed Forces
USAF	United States Air Force
USCINCLANT	Commander in Chief, US Atlantic Command
USCINCPAC	Commander in Chief, US Pacific Command
USCINCSTRAT	Commander in Chief, US Strategic Command

PART II--TERMS AND DEFINITIONS

acoustic mine. A mine with an acoustic circuit which responds to the acoustic field of a ship or sweep. (Joint Pub 1-02)

attrition sweeping. The continuous sweeping of minefields to keep the risk of mines to all ships as low as possible. (Joint Pub 1-02)

barrier. A coordinated series of obstacles designed or employed to channel, direct, restrict, delay, or stop the movement of an opposing force and to impose additional losses in personnel, time, and equipment on the opposing force. Barriers can exist naturally, be manmade, or a combination of both. (Approved for inclusion in the next edition of Joint 1-02)

barrier, obstacle, and mine warfare plan. A comprehensive, coordinated plan that includes responsibilities, general location of unspecified and specific barriers, obstacles, and minefields, special instructions, limitations, coordination, and completion times. The plan may designate locations of obstacle zones or belts. It is normally prepared as an annex to a campaign plan, operations plan, or operations order. (Approved for inclusion in the next edition of Joint 1-02)

bottom mine. A mine with negative buoyancy which remains on the seabed. Also called a ground mine. (Joint Pub 1-02)

clearing operation. An operation designed to clear or neutralize all mines and obstacles from a route or area. (Deleted as a DOD entry in 1990; now proposed for reentry in the 1993 edition of Joint Pub 1-02.) (Approved for inclusion in the next edition of Joint 1-02)

controlled mine. A mine which after laying can be controlled by the user, to the extent of making the mine safe or live, or to fire the mine. (Joint Pub 1-02)

conventional mines. Land mines, other than nuclear or chemical, which are not designed to self-destruct. They are designed to be emplaced by hand or mechanical means. Conventional mines can be buried or surface laid and are normally emplaced in a pattern to aid in recording. (Approved for inclusion in the next edition of Joint 1-02)

defensive minefield. 1. In naval mine warfare, a minefield laid in international waters or international straits with the declared intention of controlling shipping in defense of

sea communications. 2. In land mine warfare, a minefield laid in accordance with an established plan to prevent a penetration between positions and to strengthen the defense of the positions themselves. (Joint Pub 1-02)

denial measure. An action to hinder or deny the enemy the use of space, personnel, or facilities. It may include destruction, removal, contamination, or erection of obstructions. (Joint Pub 1-02)

enabling mine countermeasures. Countermeasures designed to counter mines once they have been laid. This includes both passive and active mine countermeasures. (Formerly defensive mine countermeasures.) (Approved for inclusion in the next edition of Joint 1-02)

essential elements of information. The critical items of information regarding the enemy and the environment needed by the commander by a particular time to relate with other available information and intelligence in order to assist in reaching a logical decision. (Joint Pub 1-02)

exploratory hunting. In naval mine warfare, a parallel operation to search sweeping, in which a sample of the route or area is subjected to minehunting procedures to determine the presence or absence of mines. (Joint Pub 1-02)

flame field expedients. Simple, handmade devices used to produce flame or illumination. (Approved for inclusion in the next edition of Joint 1-02)

floating mine. In naval mine warfare, a mine visible on the surface. (Joint Pub 1-02)

influence mine. A mine actuated by the effect of a target on some physical condition in the vicinity of the mine or on radiations emanating from the mine; includes acoustic, magnetic, pressure, seismic, and underwater potential. (Approved for inclusion in the next edition of Joint 1-02)

magnetic mine. A mine which responds to the magnetic field of a target. (Joint Pub 1-02)

mine. 1. In land mine warfare, an explosive or other material, normally encased, designed to destroy or damage ground vehicles, boats, or aircraft, or designed to wound, kill, or otherwise incapacitate personnel. It may be detonated by the action of its victim, by the passage of time, or by controlled means. 2. In naval mine warfare, an explosive device laid in the water with the intention of damaging or sinking ships or of deterring shipping from

entering an area. The term does not include devices attached to the bottoms of ships or to harbor installations by personnel operating underwater, nor does it include devices which explode immediately on expiration of a predetermined time after laying. (Joint Pub 1-02)

mine countermeasures. All methods for preventing or reducing damage or danger from mines. (Joint Pub 1-02)

minefield. 1. In land warfare, an area of ground containing mines laid with or without a pattern. 2. In naval warfare, an area of water containing mines laid with or without a pattern. (Joint Pub 1-02)

minefield density. In land mine warfare, the average number of mines per meter of minefield front, or the average number of mines per square meter of minefield. (Joint Pub 1-02)

minefield lane. A marked lane, unmined, or cleared of mines, leading through a minefield. (Joint Pub 1-02)

minefield marking. Visible marking of all points required in laying a minefield and indicating the extent of such minefields. (Joint Pub 1-02)

minefield record. A complete written record of all pertinent information concerned on a minefield, submitted on a standard form by the officer in charge of the laying operations. (Joint Pub 1-02)

minehunting. Employment of sensor and neutralization systems, whether air, surface, or subsurface, to locate and dispose of individual mines. Minehunting is conducted to eliminate mines in a known field when sweeping is not feasible or desirable, or to verify the presence or absence of mines in a given area. (Approved for inclusion in the next edition of Joint 1-02)

minesweeping. The technique of clearing mines using either mechanical, explosive, or influence sweep equipment. Mechanical sweeping removes, disturbs, or otherwise neutralizes the mine; explosive sweeping causes sympathetic detonations in, damages, or displaces the mine; influence sweeping produces either the acoustic and/or magnetic influence required to detonate the mine. (Approved for inclusion in the next edition of Joint 1-02)

mine warfare. The strategic, operational, and tactical use of mines and mine countermeasures. Mine warfare is divided into two basic subdivisions: the laying of mines to degrade the enemy's capabilities to wage land, air, and maritime warfare; and the countering of enemy-laid mines to permit friendly maneuver or use of selected land or sea areas. (Approved for inclusion in the next edition of Joint 1-02)

mine weapons. The collective term for all weapons which may be used in mine warfare. (Joint Pub 1-02)

minefield report. An oral, electronic, or written communication concerning mining activities, friendly or enemy, submitted in a standard format by the fastest secure means available. (Approved for inclusion in the next edition of Joint 1-02)

moored mine. A contact or influence-operated mine of positive buoyancy held below the surface by a mooring attached to a sinker or anchor on the bottom. (Joint Pub 1-02)

numbered fleet. A major tactical unit of the Navy immediately subordinate to a major fleet command and comprising various task forces, elements, groups, and units for the purpose of prosecuting specific naval operations. (Joint Pub 1-02)

obstacle. Any obstruction designed or employed to disrupt, fix, turn, or block the movement of an opposing force, and to impose additional losses in personnel, time, and equipment on the opposing force. Obstacles can exist naturally or can be manmade, or can be a combination of both. (Approved for inclusion in the next edition of Joint 1-02)

obstacle belt. A brigade-level command and control measure, normally given graphically, to show where within an obstacle zone the ground tactical commander plans to limit friendly obstacle employment and focus the defense. It assigns an intent to the obstacle plan and provides the necessary guidance on the overall effect of obstacles within a belt. (Approved for inclusion in the next edition of Joint 1-02)

obstacle restricted areas. A command and control measure used to limit the type or number of obstacles within an area. (Approved for inclusion in the next edition of Joint 1-02)

obstacle zone. A division-level command and control measure, normally done graphically, to designate specific land areas where lower echelons are allowed to employ tactical obstacles. (Approved for inclusion in the next edition of Joint 1-02)

offensive minefield. In naval mine warfare, a minefield laid in enemy territorial water or waters under enemy control. (Joint Pub 1-02)

phoney minefield. An area free of live mines used to simulate a minefield, or section of a minefield, with the object of deceiving the enemy. (Joint Pub 1-02)

pressure mine. 1. In land mine warfare, a mine whose fuse responds to the direct pressure of a target. 2. In naval mine warfare, a mine whose circuit responds to the hydrodynamic pressure field of a target. (Joint Pub 1-02)

proactive mine countermeasures. Measures intended to prevent the enemy from successfully laying mines. (Formerly offensive countermeasures.) (Approved for inclusion in the next edition of Joint 1-02)

protective minefield. 1. In land mine warfare, a minefield employed to assist a unit in its local, close-in protection. 2. In naval mine warfare, a minefield laid in friendly territorial waters to protect ports, harbors, anchorages, coasts and coastal routes. (Joint Pub 1-02)

Q-route. A system of preplanned shipping lanes in mined or potentially mined waters used to minimize the area the MCM commander has to keep clear of mines to provide safe passage for friendly shipping. (Approved for inclusion in the next edition of Joint 1-02)

reduction. The creation of lanes through a minefield or obstacle to allow passage of the attacking ground force. (Approved for inclusion in the next edition of Joint 1-02)

reinforcing obstacles. Those obstacles specifically constructed, emplaced, or detonated through military effort and designed to strengthen existing terrain to disrupt, fix, turn, or block enemy movement. (Approved for inclusion in the next edition of Joint 1-02)

reserved obstacles. Those demolition obstacles that are deemed critical to the plan for which the authority to detonate is reserved by the designating commander. (Approved for inclusion in the next edition of Joint 1-02)

scatterable mine. In land mine warfare, a mine laid without regard to classical pattern and which is designed to be delivered by aircraft, artillery, missile, ground dispenser, or by hand. Once laid, it normally has a limited life. (Approved for inclusion in the next edition of Joint 1-02)

search sweeping. In naval mine warfare, the operation of sweeping a sample of route or area to determine whether poised mines are present. (Joint Pub 1-02)

ship counter. In naval mine warfare, a device in a mine which prevents the mine from detonating until a preset number of actuations has taken place. (Joint Pub 1-02)

strategic mining. A long-term mining campaign designed to deny the enemy the use of specific sea routes or sea areas. (Approved for inclusion in the next edition of Joint 1-02)

tactical obstacles. Those obstacles employed to disrupt enemy formations, to turn them into a desired area, to fix them in position under direct and indirect fires, and to block enemy penetrations. (Approved for inclusion in the next edition of Joint 1-02)